SLV-D100
RMT-V501

SERVICE MANUAL

US Model
Canadian Model

TS-10 MECHANISM

Refer to the SERVICE MANUAL of VHS MECHANICAL ADJUSTMENT MANUAL VII for MECHANICAL ADJUSTMENTS. (9-921-790-11)

SPECIFICATIONS

System

Laser
Semiconductor laser
Format
VHS NTSC standard
Video recording system
Rotary head helical scanning FM system
Video heads
Double azimuth four heads
Video signal
NTSC color, EIA standards
Tape speed
SP: 33.35 mm/s (1 3/8 inches/s)
EP: 11.12 mm/s (7/16 inches/s)
LP: 16.67 mm/s (11/16 inches/s), playback only
Maximum recording/playback time
8 hrs. in EP mode (with T-160 tape)
Rewind time
Approx. 1 min (with T-120 tape)

Tuner section

Channel coverage
VHF 2 to 13
UHF 14 to 69
CATV A-8 to A-1, A to W, W+1 to W+84
Antenna
75-ohm antenna terminal for VHF/UHF

Audio characteristics

Frequency response
DVD VIDEO (PCM 96 kHz): 2 Hz to 44 kHz (±1.0 dB)/DVD VIDEO (PCM 48 kHz): 2 Hz to 22 kHz (±0.5 dB)/CD: 2 Hz to 20 kHz (±0.5 dB)
Signal-to-noise ratio (S/N ratio)
115 dB (LINE OUT (L/R) AUDIO jacks only)
Harmonic distortion
0.003 %
Dynamic range
DVD VIDEO: 103 dB/CD: 99 dB
Wow and flutter
Less than detected value (±0.001% W PEAK)

The signals from LINE OUT L/R (AUDIO) jacks are measured. When you play PCM sound tracks with a 96 kHz sampling frequency, the output signals from the DIGITAL OUT (OPTICAL or COAXIAL) jack are converted to 48 kHz sampling frequency.

Inputs and outputs

LINE IN 1 and LINE-2 IN
VIDEO IN, phono jack (1 each)
Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
AUDIO IN, phono jacks (2 each)
Input level: 327 mVrms
Input impedance: more than 47 kilohms
LINE OUT
VIDEO OUT, phono jack (1)
Output signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
AUDIO OUT, phono jacks (2)
Standard output: 327 mVrms
Load impedance: 47 kilohms
Output impedance: less than 10 kilohms
DIGITAL OUT
OPTICAL, Optical output jack
–18 dBm (wave length: 660 nm)
COAXIAL, phono jack
Output signal: 0.5 Vp-p, 75 ohms
COMPONENT VIDEO OUT (Y, Pb, Pr)
Phono jack
Y: 1.0 Vp-p/Pb, Pr: 0.7 Vp-p, 75 ohms

Timer section

Clock
Quartz locked
Timer indication
12-hour cycle
Timer setting
8 programs (max.)

General

Power requirements
120 V AC, 60 Hz
Power consumption
29 W
Operating temperature
0°C to 45°C (32°F to 113°F)
Storage temperature
–20°C to 60°C (–4°F to 140°F)
Operating humidity
25% to 80%
Dimensions including projecting parts and controls (w/h/d)
Approx. 430 × 100 × 330 mm (Approx. 17 × 4 × 13 inches)
Mass
Approx. 4.5 kg (Approx. 9.9 lbs)

Supplied accessories

Remote commander (1)
Size AA (R6) batteries (2)
75-ohm coaxial cable with F-type connectors (1)
Audio/video cord (pinplug × 3 ⟷ pinplug × 3) (1)

Design and specifications are subject to change without notice.

DVD PLAYER/ VIDEO CASSETTE RECORDER

VHS Hi-Fi COMPACT disc DIGITAL VIDEO DVD VIDEO

SONY®

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

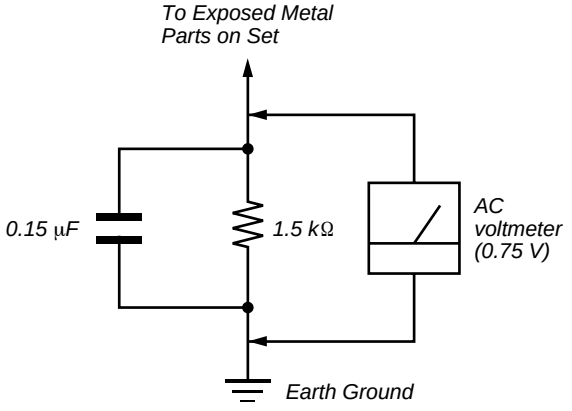

Fig. A. Using an AC voltmeter to check AC leakage.

WARNING!!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 25 cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

CAUTION:

The use of optical instrument with this product will increase eye hazard.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

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Precautions

1 Safety Precautions

1. Be sure that all of the built-in protective devices are replaced. Restore any missing protective shields.

2. When reinstalling the chassis and its assemblies, be sure to restore all pretective devices, including : control knobs and compartment covers.

3. Make sure that there are no cabinet openings through which people--particularly children--might insert fingers and contact dangerous voltages. Such openings include the spacing between the picture tube and the cabinet mask, excessively wide cabinet ventilation slots, and improperly fitted back covers.

   If the measured resistance is less than 1.0 megohm or greater than 5.2 megohms, an abnormality exists that must be corrected before the unit is returned to the customer.

4. Leakage Current Hot Check (See Fig. 1-1) :
   Warning : Do not use an isolation transformer during this test. Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI C101.1, Leakage Current for Appliances), and Underwriters Laboratories (UL Publication UL1410, 59.7).

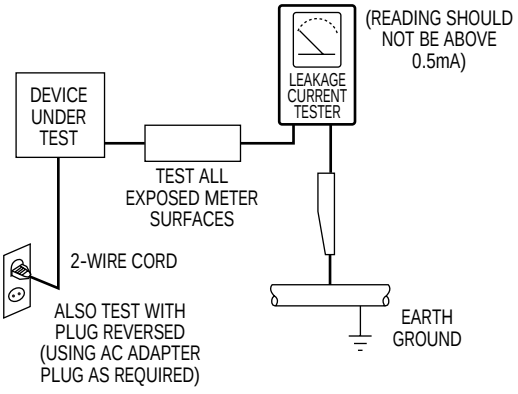

(READING SHOULD NOT BE ABOVE 0.5mA)
LEAKAGE CURRENT TESTER
DEVICE UNDER TEST
TEST ALL EXPOSED METER SURFACES
2-WIRE CORD
ALSO TEST WITH PLUG REVERSED (USING AC ADAPTER PLUG AS REQUIRED)
EARTH GROUND

Fig1. AC Leakage Test

5. With the unit completely reassembled, plug the AC line cord directly the power outlet. With the unit's AC switch first in the ON position and then OFF, measure the current between a known erath ground (metal water pipe, conduit, etc.) and all exposed metal parts, including : antennas, handle brackets, metal cabinets, screwheads and control shafts. The current measured should not exceed 0.5 milliamp. Reverse the power-plug prongs in the AC outlet and repeat the test.

6. Antenna Cold Check :
   With the unit's AC plug disconnected from the AC source, connect an electrical jumper across the two AC prongs. Connect one lead of the ohmmeter to an AC prong.
   Connect the other lead to the coaxial connector.

7. Some semiconductor ("solid state") devices are easily damaged by static electricity.
   Such components are called Electrostatically Sensitive Devices (ESDs); examples include integrated circuits and some field-effect transistors. The following techniques will reduce the occurrence of component damage caused by static electricity.

8. Immediately before handling sny semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging Wrist-strap device. (Be sure to remove it prior to applying power--this is an electric shock precaution.)

9. Design Alteration Warning :
   Never alter or add to the mechanical or electrical design of this unit. Example : Do not add auxiliary audio or video connectors.
   Such alterations might create a safety hazard.
   Also, any design changes or additions will void the manufacturer's warranty.

10. Never defeat any of the B+ voltage interlocks.
    Do not apply AC power to the unit (or any of its assemblies) unless all solid-state heat sinks are correctly installed.

11. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the positive lead; always remove the instrument's ground lead last.

12. Observe the original lead dress, especially near the following areas : Antenna wiring, sharp edges, and especially the AC and high voltage power supplies. Always inspect for pinched, out-of-place, or frayed wiring. Do not change the spacing between components and the printed circuit board. Check the AC power cord for damage. Make sure that leads and components do not touch thermally hot parts.

13. Product Safety Notice :
    Some electrical and mechanical parts have special safety-related characteristics which might not be obvious from visual inspection. These safety features and the protection they give might be lost if the replacement component differs from the original--even if the replacement is rated for higher voltage, wattage, etc.

    Components that are critical for safety are indicated in the circuit diagram by shading, (⚠ or ⚠).
    Use replacement components that have the same ratings, especially for flame resistance and dielectric strength specifications. A replacement part that does not have the same safety characteristics as the original might create shock, fire or other hazards.

2 Handling the Optical Pick-up

The laser diode in the optical pick up may suffer electrostatic breakdown because of potential static electricity from clothing and your body.

The following method is recommended.

(1) Place a conductive sheet on the work bench (The black sheet used for wrapping repair parts.)

(2) Place the set on the conductive sheet so that the chassis is grounded to the sheet.

(3) Place your hands on the conductive sheet (This gives them the same ground as the sheet.)

(4) Remove the optical pick up block

(5) Perform work on top of the conductive sheet. Be careful not to let your clothes or any other static sources to touch the unit.

- ◆ Be sure to put on a wrist strap grounded to the sheet.
- ◆ Be sure to lay a conductive sheet made of copper etc. Which is grounded to the table.

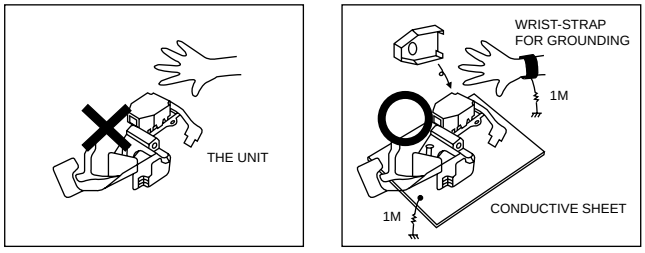


Fig.2

(6) Short the short terminal on the PCB, which is in-side the Pick-Up ASS'Y, before replacing the Pick-Up. (The short terminal is shorted when the Pick-Up Ass'y is being lifted or moved.)

(7) After replacing the Pick-up, open the short terminal on the PCB.

3 Pick-up Disassembly and Reassembly

3-1 Disassembly

1) Remove the power cord.
2) Disassemble the Deck-Assy.
3) Make solder land 2 points short on Pick-up.
   (See Fig. 1-3)
4) Disassembly the Pick-up.

3-2 Assembly

1) Replace the Pick-up.
2) Remove the soldering 2 points on Pick-up.
3) Reassemble the Deck-Assy.

Note: If the assembly and disassembly are not done in correct sequence, the Pick-up may be damaged.

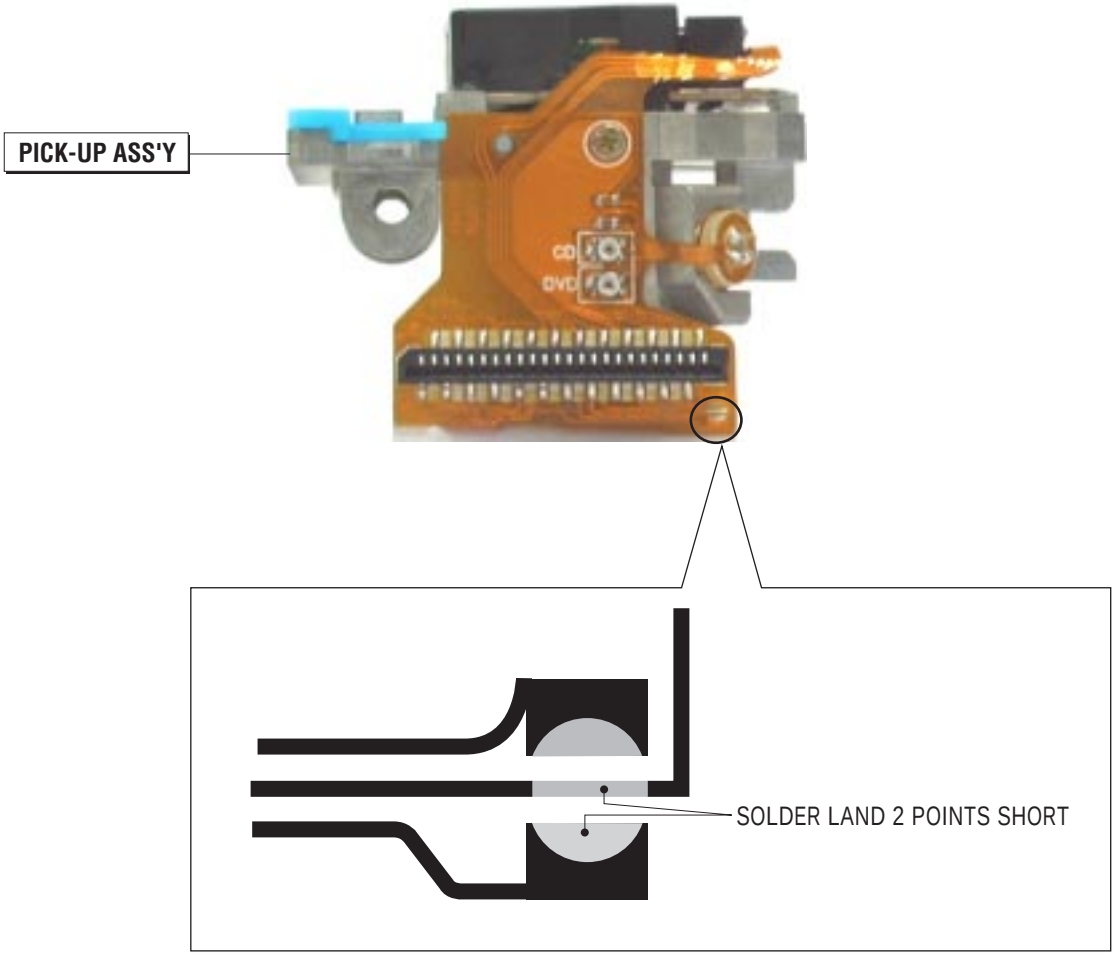


Fig.3

1. GENERAL

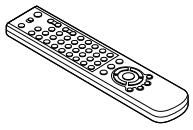
This section is extracted from instruction manual. (3-077-210-12)

Getting Started

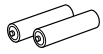
Step 1 : Unpacking

Check that you have received the following items with the DVD-VCR:

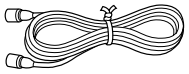
- Remote commander



- Size AA (R6) batteries



- 75-ohm coaxial cable with F-type connectors



- Audio/video cord
  (pinplug ×3 ⟷ pinplug ×3)

Controlling other TVs with the remote commander

The remote commander is preprogramed to control non-Sony TVs. If your TV is listed in the following table, set the appropriate manufacturer's code number.

1 Set TV / DVD·VIDEO at the top of the remote commander to TV.

2 Hold down **I/⏻**, and enter your TV's code number using the number buttons. Then release **I/⏻**.

Now you can use the **I/⏻**, VOL +/–, CH +/–, MUTING*, TV/VIDEO and ENTER* buttons to control your TV. You can also use the buttons marked with a dot (•) to control a Sony TV. To control the DVD-VCR, reset TV / DVD·VIDEO to DVD·VIDEO.

* for Sony TV only

Code numbers of controllable TVs

If more than one code number is listed, try entering them one at a time until you find the one that works with your TV.

TV brand	Code number
Sony	01
Akai	04
AOC	04
Centurion	12
Coronado	03
Curtis-Mathes	12
Daytron	12
Emerson	03, 04, 14
Fisher	11
General Electric	06, 10
Gold Star	03, 04, 17
Hitachi	02, 03
J.C.Penney	04, 12
JVC	09
KMC	03
Magnavox	03, 08, 12
Marantz	04, 13
MGA/Mitsubishi	04, 12, 13, 17
NEC	04, 12

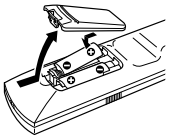
TV brand	Code number
Panasonic	06, 19
Philco	03, 04
Philips	08
Pioneer	16
Portland	03
Quasar	06, 18
Radio Shack	05, 14
RCA	04, 10
Sampo	12
Sanyo	11
Scott	12
Sears	07, 10, 11
Sharp	03, 05, 18
Sylvania	08, 12
Teknika	03, 08, 14
Toshiba	07
Wards	03, 04, 12
Yorx	12
Zenith	15

Step 2 : Setting up the remote commander

Inserting the batteries

Insert two size AA (R6) batteries by matching the + and – on the batteries to the diagram inside the battery compartment.

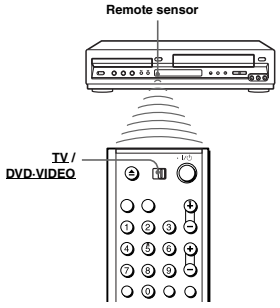
Insert the negative (–) end first, then push in and down until the positive (+) end clicks into position.



Using the remote commander

You can use this remote commander to operate this DVD-VCR and a Sony TV. Buttons on the remote commander marked with a dot (•) can be used to operate your Sony TV.

If the TV does not have the symbol near the remote sensor, this remote commander will not operate the TV.



To operate	Set TV / DVD·VIDEO to
the DVD player	DVD·VIDEO, then press SELECT DVD and point at the remote sensor at the DVD-VCR
the VCR	DVD·VIDEO, then press SELECT VIDEO and point at the remote sensor at the DVD-VCR
your TV	TV and point at the remote sensor at your TV

Notes

- With normal use, the batteries should last about three to six months.
- If you do not use the remote commander for an extended period of time, remove the batteries to avoid possible damage from battery leakage.
- Do not use a new battery with an old one.
- Do not use different types of batteries.

continued

Notes

- If you enter a new code number, the code number previously entered will be erased.
- If the TV uses a different remote control system from the one programed to work with the DVD-VCR, you cannot control your TV with the remote commander.
- When you replace the batteries of the remote commander, the code number may change. Set the appropriate code number every time you replace the batteries.

Step 3 : Basic hookups

Selecting the best hookup option

There are many ways in which your DVD-VCR can be hooked up. To hook up your DVD-VCR so that it works best for you, first scan through the table below. Then use the accompanying diagrams and procedures on the following pages to set up your DVD-VCR.

If your TV has audio/video inputs, refer to page 15 for audio/video (A/V) hookup. Then follow one of the hookups below. If your TV does not have A/V inputs, go directly to one of the hookups below.

If you have	Use	Refer to
Antenna only, no cable TV	**Hookup 1 (Plug and Play)**	**Pages 16 and 17**
No cable box or cable box with only a few scrambled channels	**Hookup 2 (Plug and Play)**	**Pages 18 and 19**
Cable box with many scrambled channels	**Hookup 3**	**Page 20**

After you have completed the connections, follow the instructions for setup.

After you have completed the setup, you are ready to use your DVD-VCR. Procedures differ depending on the hookup you used.

Before you get started

- Turn off the power to all equipment.
- Do not connect the AC power cords until all of the connections are completed. If you connect the AC power cord before the connections are completed, you may not be able to use the Plug and Play function.
- Be sure you make connections firmly. Loose connections may cause picture distortion.
- If your TV does not match any of the examples provided, see your nearest Sony dealer or qualified technician.

Caution

Connections between the DVD-VCR's VHF/UHF connector and the antenna terminals of the TV receiver should be made only as shown in the following instructions. Failure to do so may result in operation that violates the regulations of the Federal Communications Commission regarding the use and operation of RF devices. Never connect the output of the DVD-VCR to an antenna or make simultaneous (parallel) antenna and DVD-VCR connections at the antenna terminals of your receiver.

Note to CATV system installer (in USA)

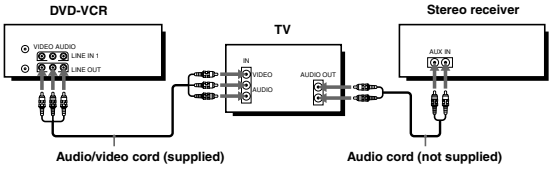
This reminder is provided to call the CATV system installer's attention to Article 820- 40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Audio/video (A/V) hookup

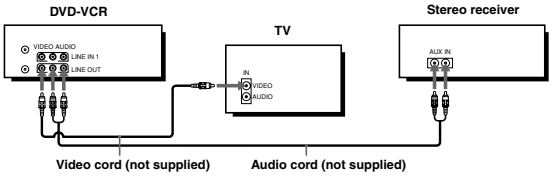
If your TV has audio/video (A/V) input jacks, you will get better picture and sound if you hook up your DVD-VCR using these connections. If your TV does not have A/V inputs, see the following pages for antenna or cable hookups. Note that "Advanced Hookups" (page 45) explains additional hookup methods that will optimize the picture and sound for a true "hometheater" experience.

If you are not planning to use your DVD-VCR to record programs, you only need to make the connections shown on this page. If you want to record regular or cable TV programs, complete these connections first, and then go to the following pages for antenna or cable hookups.

A Use this hookup if your TV has stereo jacks



B Use this hookup if your TV does not have stereo jacks



Notes

- To play a tape/disc in stereo, you must use the A/V connection.
- If you do not have a stereo receiver, connect the white LINE OUT/AUDIO L jack to the AUDIO IN jack on your TV.

continued

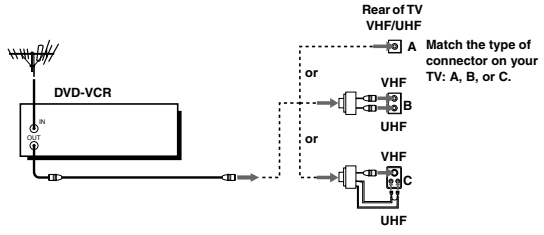
Hookup 1 (Plug and Play)

Antenna hookup

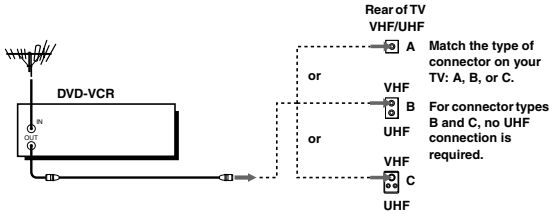
Make the following connections if you are using an antenna (if you do not have cable TV).

A Use this hookup if you are using:

- VHF/UHF antenna (you get channels 2–13 and channels 14 and higher)
- UHF-only antenna (you get channels 14 and higher)
- Separate VHF and UHF antennas



B Use this hookup if you are using a VHF-only antenna (you get channels 2–13 only)



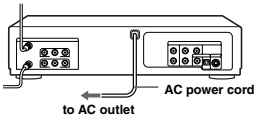
If you cannot connect your antenna cable to the DVD-VCR directly

If your antenna cable is a flat cable (300-ohm twin lead cable), attach an external antenna connector (not supplied) so you can connect the cable to the RF IN connector. If you have separate cables for VHF and UHF antennas, you should use a U/V band mixer (not supplied) (page 89).

Hookup 1 : DVD-VCR setup

Plug the DVD-VCR into an AC outlet.

The DVD-VCR automatically presets the DVD-VCR's clock and TV channels when the DVD-VCR is plugged into the AC outlet.



The DVD-VCR starts presetting the clock and channels.

When Auto preset is completed, the current time appears in the display window.

You have now completed DVD-VCR setup.

To change the on-screen display language to French or Spanish, see "Step 4 : Selecting a language" on page 21.

The clock is set using a time signal provided by some TV channels. If the clock is incorrect, or "--:--" appears in the display window, see "Using Manual Clock Set" on page 24.

To add or disable channels manually, see "Presetting/disabling channels manually" on page 28.

Notes

- If you connect the AC power cord before the antenna connections are completed, the channels may be incorrectly set. If this happens, see "Step 6 : Presetting channels" on page 26.
- Do not press any buttons on the DVD-VCR or remote commander during Auto preset.
- Auto preset starts automatically only when you plug in the AC power cord for the first time after you purchase the DVD-VCR.
- Auto preset can be performed by pressing ■ STOP continuously for 5 seconds or more with the DVD-VCR power turned off.

continued

Hookup 2 (Plug and Play)

You have no cable box, or a cable box with only a few scrambled channels

Recommended use

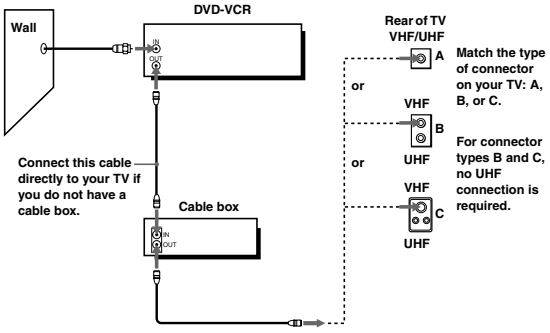
Use this hookup if you do not have a cable box. Also use this hookup if your cable system scrambles only a few channels.

What you can do with this hookup

- Record any unscrambled channel by selecting the channel on the VCR

What you cannot do

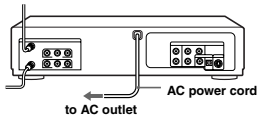
- Record scrambled channels that require a cable box



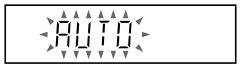
Hookup 2 : DVD-VCR setup

Plug the DVD-VCR into an AC outlet.

The DVD-VCR automatically presets the DVD-VCR's clock and TV channels when the DVD-VCR is plugged into the AC outlet.



The DVD-VCR starts presetting the clock and channels.



When Auto preset is completed, the current time appears in the display window.

You have now completed DVD-VCR setup.

To change the on-screen display language to French or Spanish, see "Step 4 : Selecting a language" on page 21.

The clock is set using a time signal provided by some TV channels. If the clock is incorrect, or "--:--" appears in the display window, see "Using Manual Clock Set" on page 24.

To add or disable channels manually, see "Presetting/disabling channels manually" on page 28.

Notes

- If you connect the AC power cord before the antenna connections are completed, the channels may be incorrectly set. If this happens, see "Step 6 : Presetting channels" on page 26.
- Do not press any buttons on the DVD-VCR or remote commander during Auto preset.
- Auto preset starts automatically only when you plug in the AC power cord for the first time after you purchase the DVD-VCR.
- Auto preset can be performed by pressing ■ STOP continuously for 5 seconds or more with the DVD-VCR power turned off.

Getting Started

continued

Hookup 3

Connecting a cable box with many scrambled channels

Recommended use

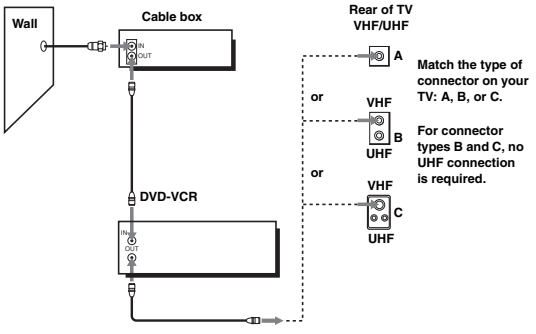
Use this hookup if your cable system scrambles all or most channels.

What you can do with this hookup

- Record any channel by selecting the channel on the cable box

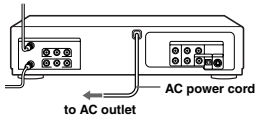
What you cannot do

- Record with the cable box turned off
- Record one channel while watching another channel



After you have completed hookup…

After you have completed hookup, plug the DVD-VCR into an AC outlet and see "Step 4 : Selecting a language" on page 21.

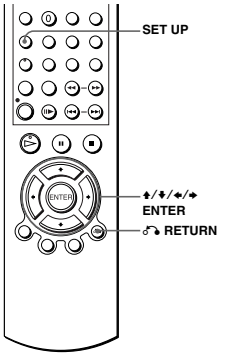


Step 4 : Selecting a language

You can change the on-screen display language.

Before you start…

- Turn on the DVD-VCR and your TV.
- Set the "RF Output Channel" to "3CH" or "4CH" in "OPTION SETUP" menu (page 87). If your TV is connected to the DVD-VCR using A/V connections, set the TV to video input.
- If the DVD player is in play mode, you cannot display the "SETUP MENU." Stop DVD playback.



1 SET UP

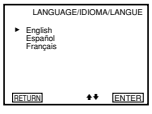
Press SET UP.

The "SETUP MENU" appears.

2

Press ↑/↓/←/→ to select (Language/ Idioma/Langue), then press ENTER.

The "LANGUAGE/IDIOMA/LANGUE" menu appears.



3

Press ↑/↓ to select the desired language, English, Spanish or French, then press ENTER.

4 RETURN

Press RETURN to exit the menu.

Getting Started

Step 5 : Setting the clock

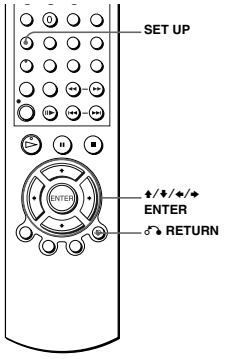
Using the Auto Clock Set feature

Some TV and cable channels transmit time signals with their broadcasts. Your DVD-VCR can pick up this time signal to automatically set the clock.

The Auto Clock Set feature works only if a channel in your area is broadcasting a time signal. If broadcasters in your area are not yet sending time signals, set the time manually (page 24).

Before you start…

- Turn on the DVD-VCR and your TV. When using a cable box, turn it on.
- Set the "RF Output Channel" to "3CH" or "4CH" in "OPTION SETUP" menu (page 87). If your TV is connected to the DVD-VCR using A/V connections, set the TV to video input.
- If the DVD player is in play mode, you cannot display the "SETUP MENU." Stop the DVD playback.



1 SET UP

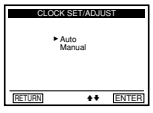
Press SET UP.

The "SETUP MENU" appears.

2 ENTER

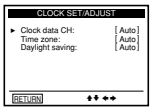
Press ↑/↓/←/→ to select (Clock Set/Adjust), then press ENTER.

The "CLOCK SET/ADJUST" menu appears.



3 ENTER

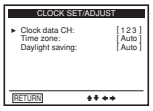
Press ↑/↓ to select "Auto", then press ENTER.



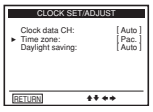
4 ENTER

Press ↑/↓ to select the item you want. Then press ←/→ to make the setting.

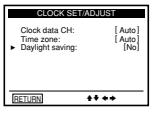
- For "Clock data CH"
  Leave the setting to "Auto" to have the DVD-VCR automatically search for a channel that carries a time signal. Press ←/→ to select a channel that carries a time signal. Use this option if you know of a channel that carries a time signal. Most PBS member stations broadcast a time signal. For the fastest response, select your local PBS station.



- For "Time zone"
  Select the time zone of your area, or select "Auto" to have the DVD-VCR automatically set your time zone.
  The options are:
  Auto ⟷ Atl. (Atlantic) ⟷ East (Eastern) ⟷ Cen. (Central) ⟷ Mtn. (Mountain) ⟷ Pac. (Pacific) ⟷ Alas (Alaska) ⟷ Haw. (Hawaii) ⟷ Auto



- For "Daylight saving"
  Select "Yes" or "No" (standard time), or "Auto" to have the DVD-VCR automatically set the daylight saving time.



5 RETURN

Press ↩ RETURN repeatedly to exit the menu.

6

To activate the Auto Clock Set function, turn off the DVD-VCR.

Notes

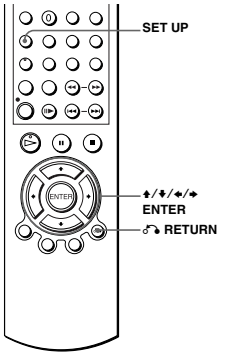
- The clock cannot be set automatically if you do not receive a channel that carries a time signal in your area. If so, set the clock manually (page 24).
- If there are only a few channels in your area that carry time signals, setting the clock automatically may take up to about 20 minutes. If nothing happens even after you wait about 20 minutes, set the clock manually (page 24).
- If you made Hookup 3, make sure you leave the cable box on.
- To record TV programs using the timer, you must set the clock accurately.

continued

Using Manual Clock Set

Before you start…

- Turn on the DVD-VCR and your TV.
- Set the "RF Output Channel" to "3CH" or "4CH" in "OPTION SETUP" menu (page 87). If your TV is connected to the DVD-VCR using A/V connections, set the TV to video input.
- If the DVD player is in play mode, you cannot display the "SETUP MENU." Stop the DVD playback.



1 SET UP

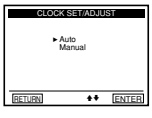
Press SET UP.

The "SETUP MENU" appears.

2 ENTER

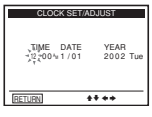
Press ↑/↓/←/→ to select (Clock Set/Adjust), then press ENTER.

The "CLOCK SET/ADJUST" menu appears.



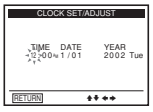
3 ENTER

Press ↑/↓ to select "Manual," then press ENTER.



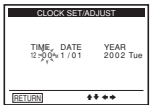
4 ENTER

Press ↑/↓ to set the hour.



5 ENTER

Press → to select the minutes and press ↑/↓ to set the minutes.



6

Set the month, day, and year in the same way as the minutes.

The day of the week is set automatically.

7 RETURN

Press ↩ RETURN to save the clock setting.

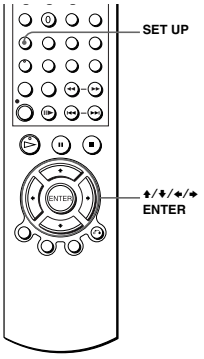
Press ↩ RETURN again to exit the menu.

Note

- To record TV programs using the timer, you must set the clock accurately.

Step 6 : Presetting channels

This DVD-VCR is capable of receiving VHF channels 2 to 13, UHF channels 14 to 69 and unscrambled CATV channels 1 to 125. First, we recommend that you preset the receivable channels in your area using automatic presetting methods. Then, if there are any unwanted channels, disable them manually. If you have already decided which channels you wish to preset, set them directly using manual presetting methods (page 28).



Presetting all receivable channels automatically

Before you start...

- Turn on the DVD-VCR and your TV. When using a cable box, turn it on.
- Set the "RF Output Channel" to "3CH" or "4CH" in "OPTION SETUP" menu (page 87). If your TV is connected to the DVD-VCR using A/V connections, set the TV to video input.
- If the DVD player is in play mode, you cannot display the "SETUP MENU." Stop the DVD playback.

1 SET UP

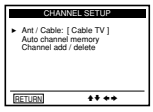
Press SET UP.

The "SETUP MENU" appears.

2

Press ↑/↓/←/→ to select (Channel Setup), then press ENTER.

The "CHANNEL SETUP" menu appears.

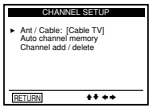


3

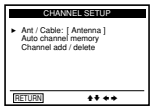
Press ↑/↓ to select "Ant/Cable."

4

- To preset cable TV channels: Press ←/→ to select "Cable TV."



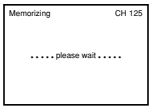
- To preset VHF and UHF channels: Press ←/→ to select "Antenna."



5

Press ↑/↓ to select "Auto channel memory," then press ENTER.

All receivable channels are preset in numerical sequence. When no more receivable channels can be found, presetting stops and the picture from the lowest numbered channel is displayed on the TV screen.

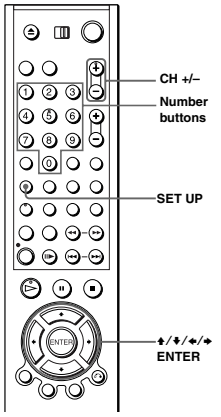


continued

Presetting/disabling channels manually

Before you start...

- Turn on the DVD-VCR and your TV. When using a cable box, turn it on.
- Set the "RF Output Channel" to "3CH" or "4CH" in "OPTION SETUP" menu (page 87). If your TV is connected to the DVD-VCR using A/V connections, set the TV to video input.
- If the DVD player is in play mode, you cannot display the "SETUP MENU." Stop the DVD playback.



1 SET UP

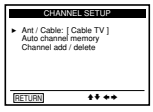
Press SET UP.

The "SETUP MENU" appears.

2

Press ↑/↓/←/→ to select (Channel Setup) then press ENTER.

The "CHANNEL SETUP" menu appears.



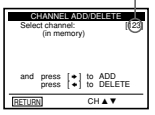
3

Press ↑/↓ to select "Channel add/delete," then press ENTER.

4

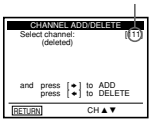
- To preset a channel:
  1. Press the number buttons to enter the channel number, then press ENTER.
  2. Press →, then press ENTER.

Channel to be preset



- To disable a channel:
  1. Press CH +/– to select the channel number.
  2. Press →, then press ENTER.

Channel to be disabled



5 RETURN

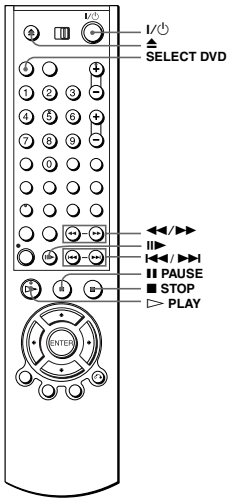
Press ↩ RETURN repeatedly to exit the menu.

Playing discs DVD VCD CD DATA-CD

Depending on the disc, some operations may be different or restricted. Refer to the operating instructions supplied with your disc.

Before you start ...

- Turn on the DVD-VCR and your TV.
- Switch the input selector on your TV so that the signal from the player appears on the TV screen.
- Press SELECT DVD to control the DVD player.



1 Press ⏏ to open the disc tray and place a disc on the disc tray.

with the playback side facing down

2 PLAY

Press ▷ PLAY.

The disc tray closes and the DVD player starts playback. The display window shows the playback time. Depending on the disc, a menu may appear on the TV screen. For DVDs, see page 60. For VIDEO CDs, see page 77.

Additional tasks

To	Press
Stop	■ STOP
Pause	II PAUSE To resume playback, press ▷ PLAY.
Advance by frame in pause mode	II▶
Go to the next chapter, track, or scene in continuous play mode	▶▶I on the remote
Go back to the previous chapter, track, or scene in continuous play mode	I◀◀ on the remote
Stop play and remove the disc	⏏

To Resume playback for the current disc (Resume Play)

The DVD player remembers the point where you stopped the disc even if the DVD player enters standby mode by pressing I/⏻.

1 While playing a disc, press ■ STOP to stop playback.

2 Press ▷ PLAY.

The DVD player starts playback from the point where you stopped the disc in Step 1.

To locate a point quickly by playing a disc in fast forward or fast reverse in continuous play mode

Press ◀◀ or ▶▶. With each press, the playback speed changes as follows.
×2 → ×4 → ×8 → ×16 → ×32 → ×128
Release the button at the desired speed.

When you find the point you want, press ▷ PLAY.

To watch slow motion in continuous play mode

Press II PAUSE, then press ▶▶ SLOW I►. With each press, the playback speed changes as follows.
1/8 → 1/4 → 1/2

To resume normal playback, press ▷ PLAY.

continued

Note

- You can change the screen type using the "SCREEN SETUP" menu. (See "Screen Setup" on page 52)

Notes on playing DTS* sound tracks on a CD

- When playing DTS-encoded CDs, excessive noise will be heard from the analog stereo jacks. To avoid possible damage to the audio system, the consumer should take proper precautions when the analog stereo jacks of the DVD player are connected to an amplification system. To enjoy DTS Digital Surround™ playback, an external 5.1-channel decoder system must be connected to the digital jack of the DVD player.
- Set the sound to "STEREO" using the AUDIO button when you play DTS sound tracks on a CD (page 71).
- Do not play DTS sound tracks without first connecting the DVD player to an audio component having a built-in DTS decoder. The DVD player outputs the DTS signal via the DIGITAL AUDIO OUT (COAXIAL or OPTICAL) jack even if "DTS" is set to "Off" in "AUDIO SETUP" menu (page 50), and may affect your ears or cause your speakers to be damaged.

Notes on playing DVDs with a DTS sound track

- DTS audio signals are output only through the DIGITAL AUDIO OUT (COAXIAL or OPTICAL) jack.
- When you play a DVD with DTS sound tracks, set "DTS" to "On" in "AUDIO SETUP" menu (page 50).
- If you connect the player to audio equipment without a DTS decoder, do not set "DTS" to "On" in "AUDIO SETUP" menu (page 50). A loud noise may come out from the speakers, affecting your ears or causing the speakers to be damaged.

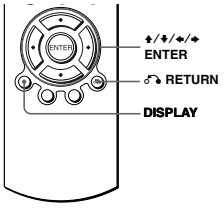
* "DTS" and "DTS Digital Surround" are registered trademarks of Digital Theater Systems, Inc.

Guide to the on-screen display

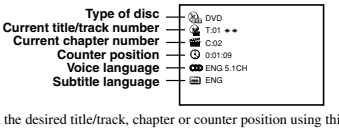
DVD VCD CD DATA-CD

You can check disc information during playback.

The displayed contents differ according to the type of disc being played.

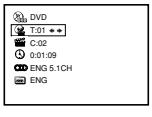


Press DISPLAY. The following information appears; type of disc, current title/track, chapter, counter position, voice language and subtitle language. Refer to "DVD AUDIO/SUBTITLE LANGUAGE" on page 102 for the abbreviation of the language.



You can playback the desired title/track, chapter or counter position using this menu.

To playback the desired title/track or chapter



1 Press ↑/↓ to select the desired item.

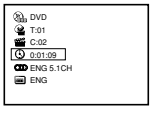
2 Press ←/→ to change the item.

3 Press ENTER to start playback.

4 Press DISPLAY or RETURN to turn off the menu.

The title/track or chapter icon will appear on the DVD playback screen followed by the current title/track or chapter number and the counter positon.

To playback from the desired counter position



1 Press ↑/↓ to select the counter position icon.

2 Enter the desired position using the number buttons.

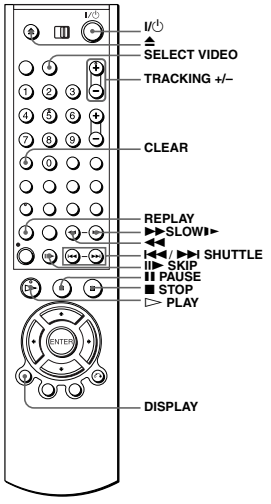
3 Press ENTER to start playback.

4 Press DISPLAY or RETURN to turn off the menu.

Playing a tape VHS

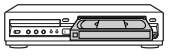
Before you start ...

- Turn on the DVD-VCR and your TV.
- Switch the input selector on your TV so that the signal from the player appears on the TV screen.
- Press SELECT VIDEO to control the VCR.



1 Insert a tape.

The VCR starts playing automatically if you insert a tape with its safety tab removed.



Playback options	Operation
Play frame by frame	During pause, press ▮▮► SKIP.
Play at various speeds (Shuttle play)	During playback, press I◀◀ or ▶▶I SHUTTLE. You can change the playback speed as follows. –×7 ⟷ –×5 ⟷ –×3 ⟷ STILL ⟷ SLOW ⟷ PLAY ⟷ ×2 ⟷ ×3 ⟷ ×5 ⟷ ×7

To resume normal playback

Press ▷ PLAY.

To use the time counter

Press CLEAR at the point on the tape that you want to find later. The counter in the display window resets to "0:00:00." To search for the counter 0:00:00 point automatically, see "To search for the counter 0:00:00 point" on page 82.

To display the counter on the TV screen, press DISPLAY.

Tip

- Adjust the picture using the TRACKING +/– buttons if:
  – Streaks appear while playing in slow motion.
  – The picture shakes during pause.

Notes

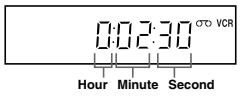
- Tapes recorded in the LP mode on other VCRs can be played back on this VCR but the picture quality cannot be guaranteed.
- The counter resets to "0:00:00" whenever a tape is reinserted.
- The counter stops counting when it comes to a portion with no recording.
- When 10 hours have passed, the counter in the display window returns to "0:00:00" and the count starts over again.
- The sound is muted during playback at various speeds.
- The picture may show noise when playing at high speed in reverse.
- While playing a tape, you can display the "SETUP MENU" but the remote commander's function switches to DVD automatically. Press ↶ RETURN repeatedly to exit the menu.
- When playback does not start even if you insert a tape with its safety tab removed, set "Auto Play" to "On" in the "VIDEO FUNCTION SETUP" menu (page 84).

2 PLAY ▷

Press ▷ PLAY.

The display window shows the playback time.

When the tape reaches the end, it will rewind automatically.



Additional tasks

To	Press
Stop play	■ STOP
Pause play	▮▮ PAUSE
Resume play after pause	▮▮ PAUSE or ▷ PLAY
Fast-forward the tape	▶▶ during stop
Rewind the tape	◀◀ during stop
Eject the tape	⏏

To play a recently watched scene

You can immediately rewind and playback the scene you want to watch again.

During playback, press REPLAY. The VCR rewinds the tape about 10 seconds in the SP mode (about 15 seconds in the EP mode) on the counter for each press of the button, and restarts playback.

To skip playback

You can skip a scene that you do not want to watch (such as a commercial) and restart playback.

During playback, press ▮▮► SKIP up to four times. The VCR skips the tape 30 seconds on the counter for each press of the button, and restarts playback.

To turn off the power while rewinding (Rewind Shut Off)

Press I/⏻ while the tape is rewinding. The power will turn off but the tape will keep rewinding until it reaches the end.

To play/search at various speeds

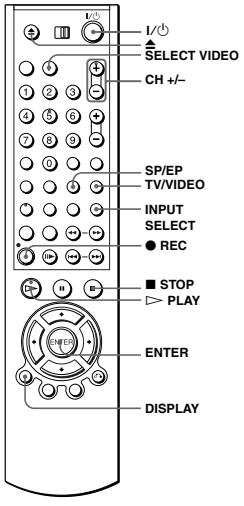
Playback options	Operation
View the picture during fast-forward or rewind	During fast-forward, hold down ▶▶. During rewind, hold down ◀◀.
Play at high speed	• During playback, briefly press ▶▶ or ◀◀. The tape continues to play at 5 times normal speed. • During playback, hold down ▶▶ or ◀◀. The tape continues to play at 5 times normal speed. When you release the button, normal playback resumes.
Play in slow motion	During pause, press ▶▶SLOW ▮►.

continued

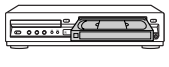
Recording TV programs VHS

Before you start ...

- Turn on the DVD-VCR and your TV.
- Switch the input selector on your TV so that the signal from the player appears on the TV screen.
- Press SELECT VIDEO to control the VCR.
- To record from a cable box, turn it on.
- Make sure the tape is longer than the total recording time.

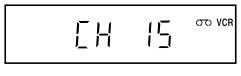


1 Insert a tape with its safety tab in place.



2 • CH/ TRACKING +/–

Press CH +/– to select the channel or line input video source you want to record.

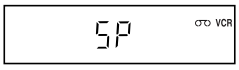


continued

3 SP / EP

Press SP/EP to select the tape speed, SP or EP.

EP (Extended Play) provides recording time three times as long as SP (Standard Play). However, SP produces better picture and audio quality.



4 ●REC

Press ● REC to start recording.

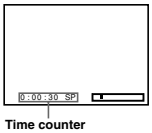
"REC" appears in the display window.

To stop recording

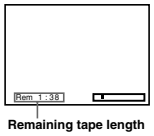
Press ■ STOP.

To check the remaining tape length

Press DISPLAY to display the time counter. With the display on, press DISPLAY again to check the remaining time. The white bar indicates the current location in relation to the entire tape length. The remaining time also appears. Press DISPLAY to turn off the indicators.



Time counter



Remaining tape length

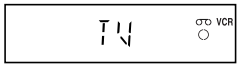
To check the remaining tape length of a tape, set "Tape Length" in the "VIDEO FUNCTION SETUP" menu correctly (page 84).

Maximum Recording Time

Tape Length	SP	EP
T-120	2 hrs	6 hrs
T-160	2 hrs 40 mins	8 hrs
T-180	3 hrs	9 hrs

To watch another TV program while recording

1 Press TV/VIDEO to display "TV" in the display window.



2 If your TV is connected to the VCR using A/V connections, set the TV to the TV's antenna input; if not, skip this step.

3 Select another channel on the TV.

To watch a DVD while recording

1 Press SELECT DVD to control the DVD player.

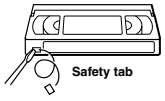
2 Press ⏏ and place the disc on the disc tray.

3 Press ▷ PLAY.

The disc tray closes and the DVD player starts playback. The TV screen will automatically change to the DVD playback screen.

To save a recording

To prevent accidental erasure, break off the safety tab as illustrated. To record on the tape again, cover the tab hole with adhesive tape.



Safety tab

Tips

- To select a channel, you can use the number buttons on the remote commander. Enter the channel number, then press ENTER.
- You can select a video source from the LINE IN 1 or LINE-2 IN jacks using the INPUT SELECT button.
- The display appears on the TV screen indicating information about the tape, but the information will not be recorded on the tape.
- If you do not want to watch TV while recording, you can turn off the TV. When using a cable box, make sure to leave it on.

Notes

- The remaining tape length may not be indicated accurately for short tapes such as T-20 or T-30, or tapes recorded in the LP mode.
- The display does not appear during still (pause) mode or slow-motion playback.
- It may take up to one minute for the VCR to calculate and display the remaining tape length after you press DISPLAY.
- You cannot record a DVD to a VCR tape.

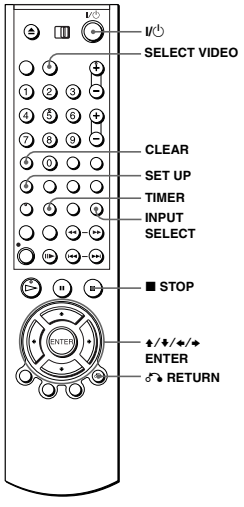
Recording TV programs using the timer

VHS

You can preset up to eight programs at a time.

Before you start…

- Check that the DVD-VCR clock is set to the correct time.
- Turn on the DVD-VCR and your TV.
- Switch the input selector on your TV so that the signal from the player appears on the TV screen.
- Press SELECT VIDEO to control the VCR.
- When using a cable box, turn it on.
- Insert a tape with its safety tab in place. Make sure the tape is longer than the total recording time.
- If the DVD player is in play mode, you cannot display the "SETUP MENU." Stop the DVD playback.



1 SET UP

Press SET UP.

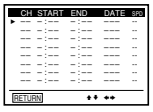
The "SETUP MENU" appears.

You can also use the TIMER button in VIDEO mode, then you can skip step2.

2 ENTER

Press ↑/↓/←/→ to select ⏲ (Set Timer Recording), then press ENTER.

The program menu appears.



3 ENTER

If necessary, press ↑/↓ to select the row that is to be set.

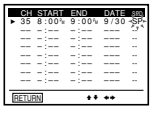
4 ENTER

Set the channel number, start and stop time, date, and tape speed:

1 Press → to flash each item in turn.

2 Press ↑/↓ to set each item.

To correct a setting, press ← to return to that setting and reset.



INPUT SELECT

To record from a source connected to the LINE IN 1 or LINE-2 IN jacks, press INPUT SELECT or ↑/↓ to display "L1 " or "L2" in the "CH" position.

To record the same program every day or the same day every week, press ↓ while the date is flashing. For details, see "Daily/weekly recording" below.

To use the Auto Tape Speed function, press ↓ to display "AUTO" in the "SPD" position. For details, see "To use the Auto Tape Speed function" on page 42.

5 RETURN

Press ↩ RETURN to confirm the setting.

The ⏲ indicator appears in the display window.

To enter another setting, press ↑/↓ to select the next row and repeat step 4.

CLEAR

Press CLEAR repeatedly to cancel the setting.

6 RETURN

Press ↩ RETURN repeatedly to exit the menu.

The DVD-VCR stands by for recording (you do not have to turn off the DVD-VCR). When using a cable box, leave it on.

continued

To stop recording

To stop the DVD-VCR while recording, press SELECT VIDEO and then press ■ STOP.

Daily/weekly recording

In step 4 above, press ↓ to select the recording pattern. Each time you press ↓, the indication changes as shown below. Press ↑ to change the indication in reverse order.

MO~FR → SUN'S → MON'S → ..... → SAT'S → 1 month later → (dates count down) → the current date

To use the Auto Tape Speed function

When you are recording a program in the AUTO mode and the remaining tape becomes shorter than the recording time, the tape speed is automatically changed to the EP mode. Note that some noise will appear on the picture when the tape speed is changed. If you want to keep the tape speed, select SP. To operate this function, set "Tape Length" in "VIDEO FUNCTION SETUP" menu correctly (page 84).

To watch another TV program after setting the timer

1 Press TV/VIDEO to display "TV" in the display window.

2 If your TV is connected to the VCR using A/V connections, set the TV to the TV's antenna input; if not, skip this step.

3 Select another channel on the TV.

To watch a DVD after setting the timer

1 Press SELECT DVD to control the DVD player.

2 Press ⏏ and place the disc on the disc tray.

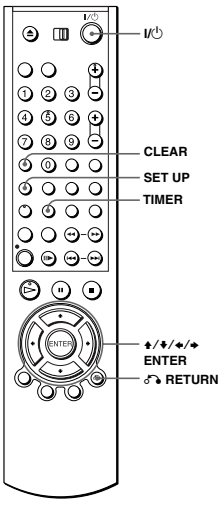
3 Press ▷ PLAY.

The disc tray closes and the DVD player starts playback. The TV screen will automatically change to the DVD playback screen.

Tips

- To set the channel, you can also use the ↑/↓ or number buttons.
- If the ⏲ indicator appears, the timer settings overlap. To check, change or cancel the program setting, repeat the steps of "Recording TV programs using the timer" on page 40.
- If the ○ indicator appears, this means that the VCR is currently recording this program.
- You can also do the following tasks while the VCR is recording:
  – Reset the counter (page 36).
  – Display tape information on the TV screen (page 38).

Checking/changing/canceling timer settings VHS



1 SET UP

Press SET UP when the DVD player is in stop mode.

The "SETUP MENU" appears.

You can also use the TIMER button in VIDEO mode, then you can skip step2.

continued

2 RETURN

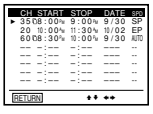
Press ↑/↓/←/→ to select "Set Timer Recording", then press ENTER.

- If you want to change a setting, go on to the next step.
- If you do not need to change the settings, press ↩ RETURN repeatedly to exit the menu, then turn off the VCR to return to recording standby.

3 CLEAR

Press ↑/↓ to select setting you want to change or cancel.

- To change the setting, press ←/→ to flash the item you want to change, and press ↑/↓ to change it.
- To cancel the setting, press CLEAR.



4 RETURN

Press ↩ RETURN to confirm the setting.

The ⏲ indicator appears in the display window.

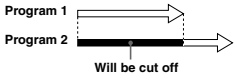
5 RETURN

Press ↩ RETURN repeatedly to exit the menu.

The DVD-VCR stands by for recording (you do not have to turn off the DVD-VCR). When using a cable box, leave it on.

When the timer settings overlap

The program that starts first has priority and the second program starts recording only after the first program has finished. If the programs start at the same time, the program listed first in the menu has priority.



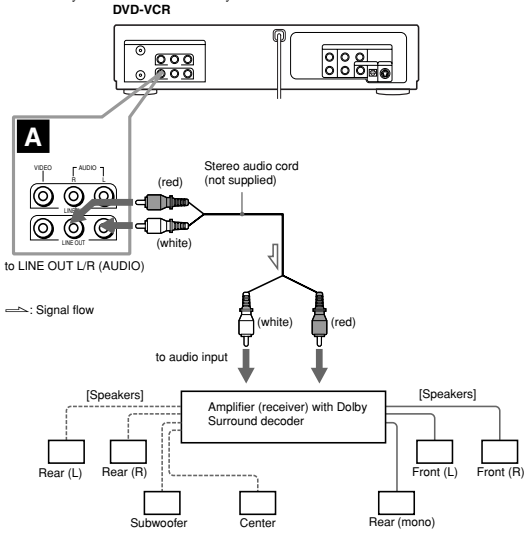
Advanced Hookups

A/V Receiver hookup DVD VCD CD DATA-CD VHS

A Use this hookup if your A/V receiver has a Dolby* Surround (Pro Logic) decoder and 3 to 6 speakers

You can enjoy the Dolby Surround effects only when playing Dolby Surround audio or multi-channel audio (Dolby Digital) discs.

* Manufactured under license from Dolby Laboratories. "Dolby," "Pro Logic," and the double-D symbol are trademarks of Dolby Laboratories.



Note

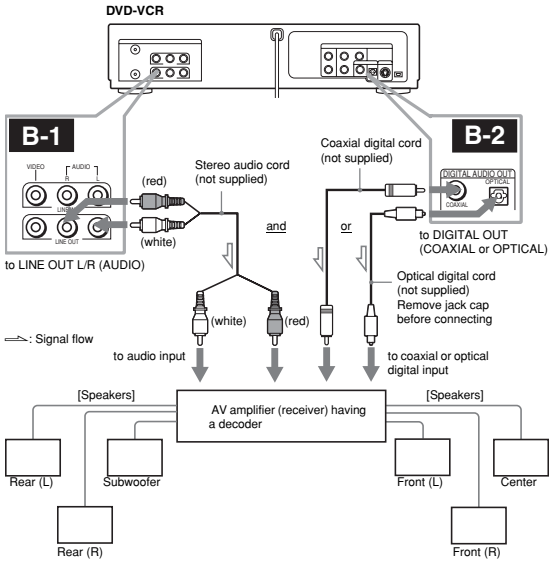
- When connecting 6 speakers, replace the monaural rear speaker with a center speaker, 2 rear speakers and a subwoofer.

continued

B Use this hookup if your A/V reciever has a Dolby Digital or DTS* decoder, a digital input jack and 6 speakers

This connection will allow you to use the Dolby Digital or DTS decoder function of your AV amplifier (receiver). You are not able to enjoy the surround sound effects of this player. You must make connections using B-1 and B-2.

* Manufactured under license from Digital Theater Systems, Inc. "DTS" and "DTS Digital Surround" are registered trademarks of Digital Theater Systems, Inc.

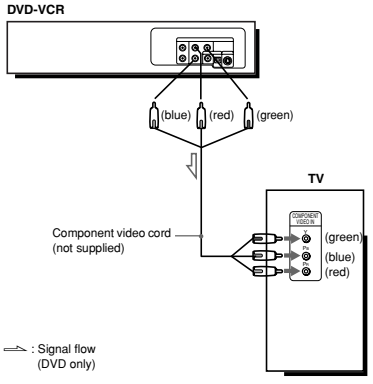


Note

- After you have completed the connection, be sure to set "Dolby Digital" to "Dolby Digital" and "DTS" to "On" in "Audio Setup" (page 49). Otherwise, no sound or a loud noise will come from the speakers.

B Use this hookup if your TV has component video input jacks

- Connect your TV via the COMPONENT VIDEO OUT jacks using a component video cord (not supplied) or three video cords (not supplied) of the same kind and length. You will enjoy accurate color reproduction and high quality images. See page 47 for audio connections.



Notes

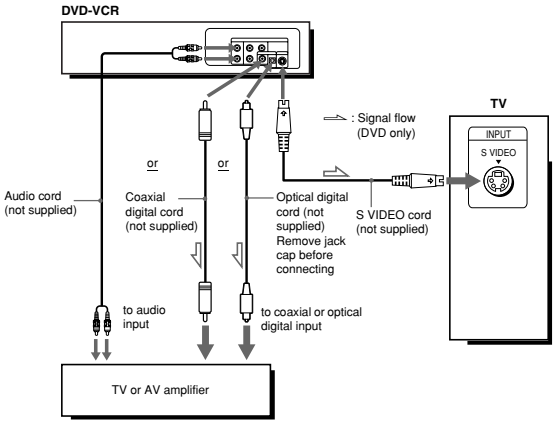
- Set "Video Out" to "Component" in the "SCREEN SETUP" menu (page 52) to view pictures from the component video jacks.
- The connection using COMPONENT VIDEO OUT jack is only for the DVD player.

S-Video/Component Video hookup DVD

Make audio connections using the LINE OUT AUDIO L/R jacks or DIGITAL AUDIO OUT (OPTICAL or COAXIAL) jacks on the right side of the DVD-VCR when you use S-VIDEO/ Component Video hookup.

A Use this hookup if your TV has an S VIDEO input jack

- Connect an S VIDEO cord (not supplied). You will enjoy high quality images.



Notes

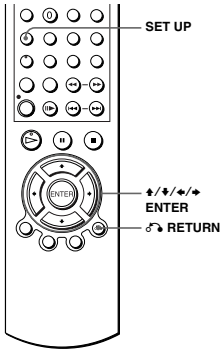
- Set "Video Out" to "S-Video" in the "SCREEN SETUP" menu (page 52) to view pictures from the S VIDEO jack.
- The connection using S VIDEO OUT jack is only for the DVD player.

continued

DVD Settings and Adjustements

Audio Setup

"Audio Setup" allows you to set the sound according to the playback and connection conditions.



1 SET UP

Press SET UP when the DVD player is in stop mode.

The "SETUP MENU" appears.

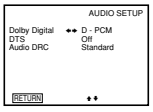
2 ENTER

Press ↑/↓/←/→ to select (DVD Setup), then press ENTER.

The "DVD SETUP" menu appears.

3 ENTER

Press ↑/↓ to select "Audio Setup," then press ENTER.



continued

4 Press ↑/↓ to select the setup item from the displayed list: "Dolby Digital," "DTS," or "Audio DRC."

5 Press ←/→ to select an item, then press ↩ RETURN to confirm the setting.

RETURN

6 Press ↩ RETURN repeatedly to exit the menu.

RETURN

Menu choices

• Dolby Digital (DVD only)

Selects the type of Dolby Digital signal.
The default setting is indicated in bold print.

D-PCM	Select this when the player is connected to an audio component lacking a built-in Dolby Digital decoder.
Dolby Digital	Select this when the player is connected to an audio component with a built-in Dolby Digital decoder.

• DTS (DVD only)

Selects whether or not to output DTS signals.
The default setting is indicated in bold print.

Off	Select this when the player is connected to an audio component lacking a built-in DTS decoder.
On	Select this when the player is connected to an audio component with a built-in DTS decoder.

• Audio DRC (Dynamic Range Control) (DVD only)

Makes the sound clear when the volume is turned down when playing a DVD that conforms to "Audio DRC." This affects the output from the following jacks:
– LINE OUT AUDIO L/R jacks
– DIGITAL AUDIO OUT (OPTICAL or COAXIAL) jack only when "Dolby Digital" is set to "D-PCM".
The default setting is indicated in bold print.

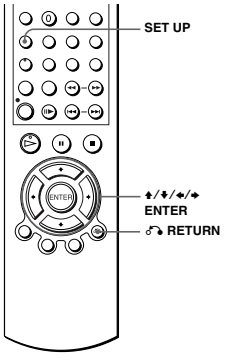
Standard	Normally select this position.
TV Mode	Makes the low sounds clear even if you turn the volume down.

Notes

- If you select surround setting while playing a DVD, the player does not output Dolby Digital signals from the DIGITAL AUDIO OUT (OPTICAL or COAXIAL) jack (when you set "Dolby Digital" to "D-PCM").
- If you connect a component that does not conform to the selected audio signal, a loud noise (or no sound) will come out from the speakers, affecting your ears or causing the speakers to be damaged.

Screen Setup

"Screen Setup" allows you to set the screen according to the playback and connection conditions.



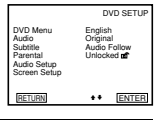
1 SET UP

Press SET UP when the DVD player is in stop mode.

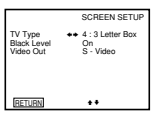
The "SETUP MENU" appears.

2 Press ↑/↓/←/→ to select (DVD Setup), then press ENTER.

The "DVD SETUP" menu appears.



3 Press ↑/↓ to select "Screen Setup," then press ENTER.



4 Press ↑/↓ to select the setup item from the displayed list: "TV Type," "Black level," or "Video Out."

5 Press ←/→ to select an item, then press ↩ RETURN to confirm the setting.

RETURN

6 Press ↩ RETURN repeatedly to exit the menu.

RETURN

Menu choices

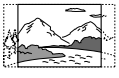
• TV Type (DVD only)

Selects the aspect ratio of the connected TV (4:3 standard or wide).
The default setting is indicated in bold print.

4:3 Letter Box	Select this when you connect a 4:3 screen TV. Displays a wide picture with bands on the upper and lower portions of the screen.
4:3 Pan Scan	Select this when you connect a 4:3 screen TV. Automatically displays the wide picture on the entire screen and cuts off the portions that do not fit.
16:9	Select this when you connect a wide-screen TV or a TV with a wide mode function.

4:3 Letter Box

4:3 Pan Scan



16:9

continued

• Black Level

You can enhance the black level by increasing the brightness and contrast when viewing DVDs.
The default setting is indicated in bold print.

On	Increases the contrast.
Off	Stops the increase of the contrast.

• Video Out

You must set this setting when you use S VIDEO OUT or COMPONENT VIDEO OUT jacks to connect to the TV.
The default setting is indicated in bold print.

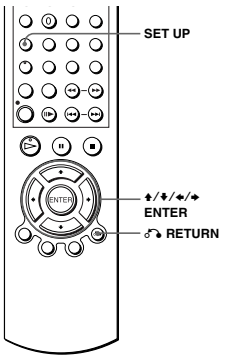
S-Video	Select this when you use the S VIDEO OUT jack on the rear panel to connect to the TV.
Component	Select this when you use the COMPONENT VIDEO OUT jacks on the rear panel to connect to the TV.

Notes

- Playback settings stored in the disc take priority over the "DVD SETUP" menu settings and not all the functions described may work.
- Depending on the DVD, "4:3 Letter Box" may be selected automatically instead of "4:3 Pan Scan" or vice versa.
- The connection using S VIDEO OUT or COMPONENT VIDEO OUT jacks is only for the DVD player.

Setting the display or sound track language DVD

You can set various languages for the disc's menu, sound track or subtitle.



1 SET UP

Press SET UP when the DVD player is in stop mode.

The "SETUP MENU" appears.

2

Press ↑/↓/←/→ to select (DVD Setup), then press ENTER.

The "DVD SETUP" menu appears.

3

Press ↑/↓ to select the language setup item from the displayed list: "DVD Menu," "Audio," or "Subtitle."
Then press ENTER.

continued

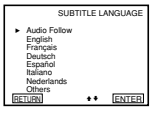
4

Press ↑/↓ to select the desired language, then press ENTER.

• DVD MENU LANGUAGE
You can select the desired language for the disc's menu.

• AUDIO LANGUAGE
Switches the language of the sound track. When you select "Original," the language given priority in the disc is selected.

• SUBTITLE LANGUAGE
Switches the language of the subtitle recorded on the DVD.
When you select "Audio Follow," the language for the subtitles changes according to the language you selected for the sound track.



5 RETURN

Press ↩ RETURN repeatedly to exit the menu.

Tip

If you select "Others" in step 4, an additional language menu appears. Press ↑/↓/←/→ to select the desired language, then press ENTER.

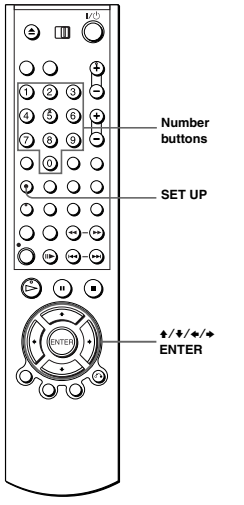
Notes

- When you select a language that is not recorded on the DVD in step 4, one of the recorded languages will be automatically selected.
- Playback settings stored in the disc take priority over the DVD SETUP settings and not all the functions described may work.

Parental Control (limiting playback by children)

DVD

Playback of some DVDs can be limited according to a predetermined level such as the age of the users. The "PARENTAL CONTROL" function allows you to set a playback limitation level.



1 SET UP

Press SET UP when the DVD player is in stop mode.

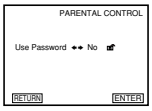
The "SETUP MENU" appears.

continued

2 Press ↑/↓/←/→ to select (DVD Setup), then press ENTER.

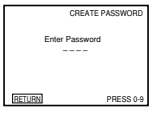
The "DVD SETUP" menu appears.

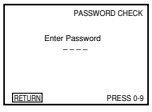
3 Press ↑/↓ to select "Parental," then press ENTER.

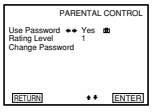


4 Press → to select "Yes".

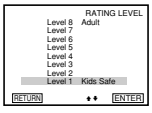
- If you have not entered a password
  The display for registering a new password appears.
  Enter a 4-digit password using the number bottons.
  The display for confirming the password appears.
  Re-enter the password.
- When you have already registered a password
  The display for entering the password appears.
  Enter a 4-digit password using the number bottons.







5 Press ↑/↓ to select "Rating Level," then press ENTER.

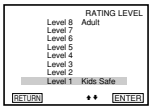


6 Press ↑/↓ to select the level you want, then press ENTER.

The options are as follows.

Level 8 (Adult) ⟷ Level 7 ⟷ Level 6 ⟷ Level 5 ⟷ Level 4 ⟷ Level 3 ⟷ Level 2 ⟷ Level 1 (Kids Safe)

The higher the value, the stricter the limitation.



7 RETURN

Press ↩ RETURN repeatedly to exit the menu.

To change the password

1. Select "Change Password" in step 4.
   The display for entering a new password appears.
2. Enter a new 4-digit password using the number buttons.
   The display for confirming the password appears.
3. Re-enter the new password.

To turn off the Parental Control function

Set "Use Password" to "No" in Step 4.

To play a disc for which Parental Control is set

1. Insert the disc, then press ▷ PLAY.
   The display for entering your password appears.
2. Enter your 4-digit password using the number buttons.
   The player starts playback.

If you forget your password

1. Remove the disc and turn off the DVD-VCR.
2. Turn on the DVD-VCR again with no disc in the unit.
3. Hold down ◀◀ and ▶▶ on the front panel simultaneously for 5 seconds.
   "reset ok" appears on the screen.
4. Turn off the DVD-VCR.
   The password is cleared.

Notes

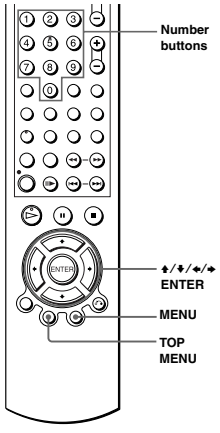
- When you play DVDs which do not have the Parental Control function, playback cannot be limited on this player.
- All the ratings higher than the level you select will be blocked.
- Write your password down and keep it in a safe place in case you forget it.

DVD Additional Operations

Using the DVD's menu DVD

A DVD is divided into long sections of a picture or a music feature called "titles." When you play a DVD which contains several titles, you can select the title you want using the TOP MENU button.

When you play DVDs that allow you to select items such as the language for the subtitles and the language for the sound, select these items using the MENU button.



1 TOP MENU / MENU

Press TOP MENU or MENU.

The disc's menu appears on the TV screen.

The contents of the menu vary from disc to disc.

2 Press ↑/↓/←/→ to select the item you want to play or change.

You can also use the number buttons to select the item.

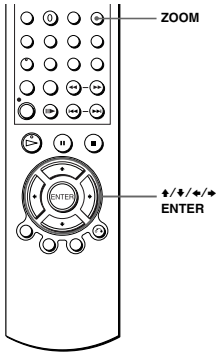
3 Press ENTER.

Note

- Depending on the DVD, you may not be able to use the TOP MENU button.

Zooming into a scene DVD VCD

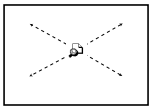
You can zoom into a scene during playback or still mode.



1 MUTING/ZOOM

Press ZOOM.

" 🔍 " appears.



2 Press ↑/↓/←/→ to move " 🔍 " to the position where you want to zoom in.

3 Press ENTER repeatedly to change the magnification.

Each time you press the button, the magnification changes as shown below.

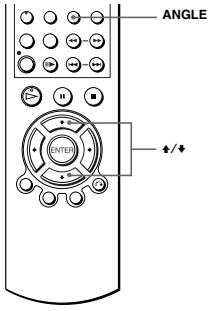
2× ⟶ 4× ⟶ 2× ⟶ normal magnification

Note

- You cannot use 4× magnification when you play VIDEO CDs.

Changing the angles DVD

If various angles (multi-angles) for a scene are recorded on the DVD, "" appears in the display when you press ANGLE during playback. This means that you can change the viewing angle.

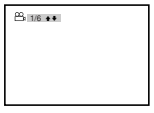


1 ANGLE

Press ANGLE during playback.

The angle number appears on the display.

The number after the slash indicates the total number of angles.



2

Press ↑/↓ repeatedly to select the angle number.

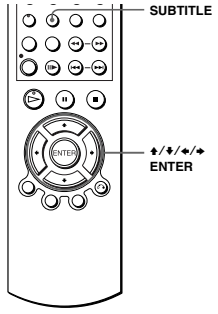
The scene changes to the selected angle.

Note

- Depending on the DVD, you may not be able to change the angles even if multi-angles are recorded on the DVD.

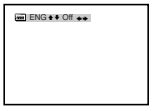
Displaying the subtitle DVD

If subtitles are recorded on the disc, you can change the subtitles or turn them on and off whenever you want while playing a DVD.



1 TIMER/ SUBTITLE

Press SUBTITLE during playback.



2

Press ↑/↓ repeatedly to select the language, then press ENTER.

Depending on the DVD, the choice of language varies. Refer to "DVD AUDIO/SUBTITLE LANGUAGE" on page 102 for the abbreviation of the language.

3

Press ←/→ repeatedly to select "On," then press ENTER.

To turn off the subtitles

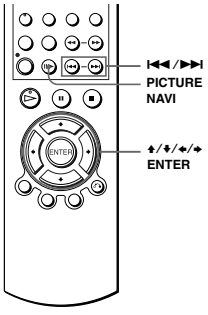
Select "Off" in step 3, then press ENTER.

Note

- Depending on the DVD, you may not be able to change the subtitles even if multilingual subtitles are recorded on it. You also may not be able to turn them off.

Picture navigation DVD

You can devide the screen into 9 subscreens and display the first scene of each chapter.



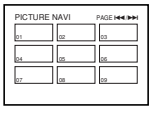
1 SKIP/ PICTURE NAVI

Press PICTURE NAVI during playback.

The 9 subscreens appear.

The scenes represent each of the chapters on the DVD.

The number of chapters differs depending on the disc, so there may be fewer than 9 subscreens.



2

Press ↑/↓/←/→ repeatedly to select the scene you want, then press ENTER.

You can start playback from the desired chapter.

Note

- If the DVD has more than 9 chapters, press I◀◀ / ▶▶I to view the following subscreens.

Various play mode functions (Program play, Random play, Repeat play)

You can set the following play modes:

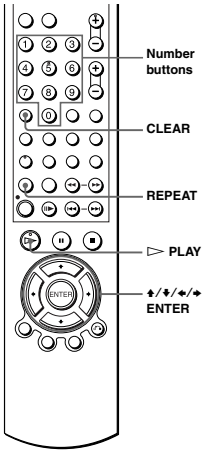
- Program play (page 65)
- Random play (page 67)
- Repeat play (page 68)

Note

- The play mode is canceled when:
  - you open the disc tray
  - the player enters standby mode by pressing I/⏻.

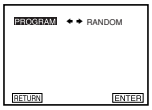
Creating your own program (Program play) DVD VCD CD

You can play the contents of a disc in the order you want by arranging the order of the titles, chapters, or tracks on the disc to create your own program. You can program up to 99 titles, chapters, and tracks.

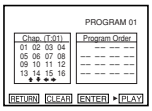


continued

1 REPLAY/REPEAT — Press REPEAT when the DVD player is in stop mode.

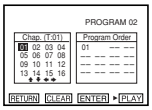


2 Press ←/→ to select "PROGRAM", then press ENTER.



3 Press ↑/↓/←/→ to select the chapter/track number you want to program, then press ENTER.

You can also use the number buttons to enter the chapter/track number.



4 To program other chapters/tracks, repeat step 3.

The programed title, chapter and track numbers are displayed in the selected order.

5 Press ▷ PLAY to start program play.

Program play starts.
When the program ends, you can restart the same program again by pressing ▷ PLAY.

To stop program play

Press CLEAR.

To change or cancel a program

1 Follow steps 1 and 2 of "Creating your own program (Program play)."

2 Press CLEAR.
The last programed number is canceled.

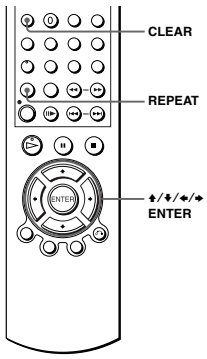
3 Follow step 3 for new programing.

Note

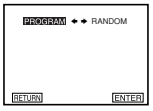
- You can do repeat play or random play of the programed titles, chapters, or tracks. During program play, follow the steps of "Playing repeatedly (Repeat play)" (page 68) or "Playing in random order (Random play)" (page 67).

Playing in random order (Random play) DVD VCD CD

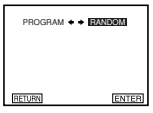
You can shuffle the playback order of titles, chapters, or tracks. Subsequent "shuffling" may produce a different playing order.



1 REPLAY/REPEAT — Press REPEAT when the DVD player is in stop mode.



2 Press ←/→ to select RANDOM, then press ENTER.



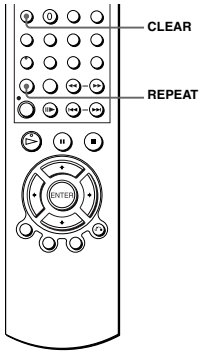
To return to normal play

Press CLEAR.

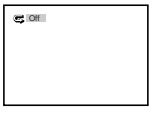
continued

Playing repeatedly (Repeat play) DVD VCD CD DATA-CD

You can play all of the titles or tracks on a disc or a single title, chapter, or track repeatedly.



1 REPLAY/REPEAT — Press REPEAT during playback.



2 REPLAY/REPEAT — Press REPEAT repeatedly to select the item to be repeated.

When playing a DVD

- Chapter: repeats the current chapter.
- Title: repeats the current title on a disc.

When playing a VIDEO CD or CD

- Track: repeats the current track.
- Disc: repeats all of the tracks.

When playing a DATA CD (MP3 audio)

- Track: repeats the current track.

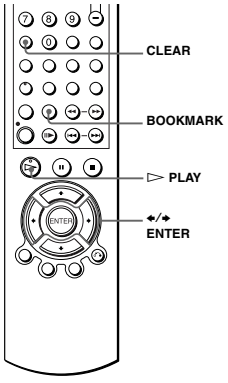
To return to normal play

Select "Off" or press CLEAR in step 2.

Using bookmarks DVD

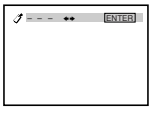
You can store scenes in the player's memory as bookmarks.

You can set up to three bookmarks.



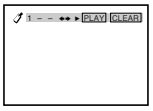
1 SEARCH MENU/BOOKMARK — Press BOOKMARK during playback.

Three bookmark placeholders (- - -) appear next to the bookmark icon.



2 Press ←/→ to select one of the placeholders.

3 Play the DVD scene you want, then press ENTER.
The selected placeholder changes to a number (1, 2 or 3).



continued

To cancel the bookmark

Press CLEAR after step 3.

To exit the Bookmark menu

Press BOOKMARK.

To playback the scene where you insert a bookmark

1 Press BOOKMARK during playback.

2 Press ←/→ to select the bookmark placeholder, then press ▷ PLAY to play the bookmark.

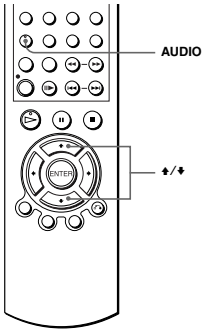
Note

- Depending on the DVD, you may not be able to use the bookmark function.

Changing the sound DVD VCD CD DATA-CD

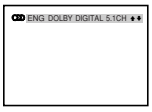
When playing a DVD recorded in multiple audio formats (PCM, Dolby Digital, or DTS), you can change the audio format. If the DVD is recorded with multilingual tracks, you can also change the language.

With CDs, DATA CDs, or VIDEO CDs, you can select the sound from the right or left channel and listen to the sound of the selected channel through both the right and left speakers. For example, when playing a disc containing a song with the vocals on the right channel and the instruments on the left channel, you can hear the instruments from both speakers by selecting the left channel.



1 AUDIO

Press AUDIO during playback.



2

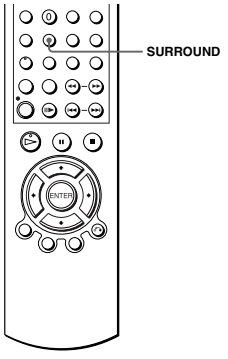
Press ↑/↓ repeatedly to select the desired language/audio setting.

- When playing a DVD
  Depending on the DVD, the choice of language varies.
  Refer to "DVD AUDIO/SUBTITLE LANGUAGE" on page 102 for the abbreviation of the language.
- When playing a VIDEO CD, CD, or DATA CD (MP3 audio)
  The default setting is indicated in bold print.

STEREO	The standard stereo sound
Left	The sound of the left channel (monaural)
Right	The sound of the right channel (monaural)

Virtual surround setting DVD

When you connect a stereo TV or 2 front speakers, SURROUND lets you enjoy surround sound effects by using sound imaging to create virtual rear speakers from the sound of the front speakers without using actual rear speakers.
This function is designed to work with the LINE OUT AUDIO L/R jacks.
Note that if you select surround setting, the player does not output Dolby Digital signals from the DIGITAL AUDIO OUT (OPTICAL or COAXIAL) jack (when you set "Dolby Digital" in "AUDIO SETUP" menu to "D-PCM"). (page 50)



1 SURROUND

Press SURROUND during playback.

2 SURROUND

Press SURROUND repeatedly to select "On."

To cancel the setting

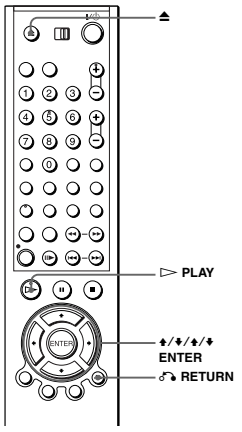
Select "Off" in step 2.

Notes

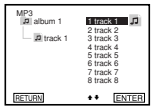
- When the playing signal does not contain a signal for the rear speakers, the surround effects will be difficult to hear.
- When you activate the surround effect, turn off the surround setting of the connected TV or amplifier (receiver).
- Make sure that your listening position is between and at an equal distance from your speakers, and that the speakers are located in similar surroundings.
- If you use the DIGITAL AUDIO OUT (OPTICAL or COAXIAL) jack and set "Dolby Digital" to "Dolby Digital" or "DTS" to "On" in "AUDIO SETUP" menu, sound will come from your speakers but it will not have the surround effect.
- Portions of this product are licensed from Desper Products, Inc., a subsidiary of Spatializer Audio Laboratories, Inc. Copyright ©1997-2001Spatializer®, N-2-2™, and the circle-in-square device are trademarks of Desper Products, Inc.

Playing an MP3 audio track DATA-CD

You can play back DATA CDs (CD-ROMs/CD-Rs/CD-RWs) recorded in MP3 (MPEG1 Audio Layer 3) format.



1 Press ⏏ and place a DATA CD on the disc tray, then press ⏏ to close the tray.

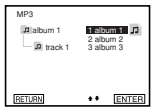


2 Press ↑/↓ to select the desired track, then press ENTER.

The selected track starts playing.

When a track or album is being played, its title is shaded.

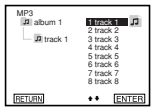
3 RETURN To change the album, press ↩ RETURN.



4 Press ↑/↓ to select an album, then press ENTER.

The list of tracks contained in the album appears.

To select a track, repeat step2.



To go to the next or previous page

Press → or ←.

To return to the previous display

Press ↩ RETURN.

To turn off the display

Press ■ STOP, then press ↩ RETURN.

Notes

- Only the letters in the alphabet and numbers can be used for album or track names. Anything else is displayed as an asterisk.
- Up to 8 alphanumeric characters can be displayed for album or track names.
- ID3 tags cannot be displayed.

About MP3 audio tracks

You can play MP3 audio tracks on CD-ROMs, CD-Rs, or CD-RWs. However, the discs must be recorded according to ISO9660 level 1, level 2, or Joliet format for the player to recognize the tracks.
You can also play discs recorded in Multi Session.
See the instructions of the CD-R/RW device or recording software (not supplied) for details on the recording format.

To play a Multi Session CD

This player can play Multi Session CDs when an MP3 audio track is located in the first session. Any subsequent MP3 audio tracks, recorded in the later sessions, can also be played back. When audio tracks and images in music CD format or video CD format are recorded in the first session, only the first session will be played back.

Notes

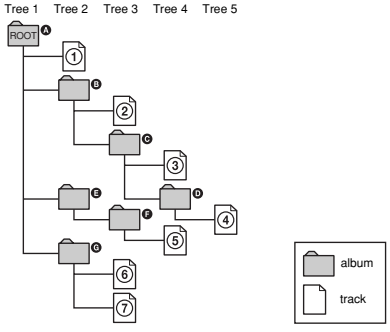
- If you put the extension ".MP3" to data not in MP3 format, the player cannot recognize the data properly and will generate a loud noise which could damage your speaker system.
- The player cannot play audio tracks in MP3PRO format.
- This player supports MP3 audio tracks recorded with a bit rate of 128 kbps and a sampling frequency of 44.1 kHz. Attempting to play MP3 audio tracks recorded with different specifications may result in loud noise, sound skipping or speaker damage.
- Depending on the disc, playback may take some time to start.

continued

The Playback order of MP3 audio tracks

The playback order of albums and tracks recorded on a DATA CD is as follows.

- Structure of disc contents



When you insert a DATA CD and press ▷ PLAY, the numbered tracks are played sequentially, from ① through ⑦. Any sub-albums/tracks contained within a currently selected album take priority over the next album in the same tree. (Example: ❸ contains ❹ so ④ is played before ⑤.)

When you press ↩ RETURN and the list of MP3 albums appears (page 75), the albums are arranged in the following order: ❶ → ❷ → ❸ → ❹ → ❺ → ❻. Albums that do not contain tracks (such as album ❺) do not appear in the list.

Tips

- If you add numbers (01, 02, 03, etc.) to the front of the track file names, the tracks will be played in that order.
- Since a disc with many trees takes longer to start playback, place your albums within the first two trees.

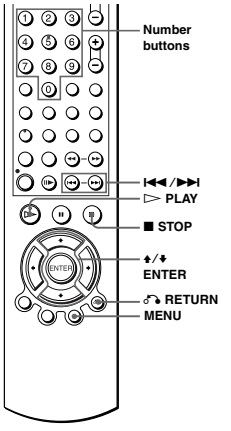
Notes

- Depending on the software you use to create the DATA CD, the playback order may differ from the illustration above.
- The playback order above may not be applicable if there are more than a total of 200 albums and tracks in the DATA CD.
- The player can recognize up to 100 albums (the player will count just albums, including albums that do not contain MP3 audio tracks). The player will not play any albums beyond the first 100 albums. Of the first 100 albums, the player will play no more than a combined total of 200 albums and tracks.

Playing VIDEO CDs with "MENU ON/OFF" Functions VCD

The PBC (Playback control) function allows you to search and perform other operations interactively. PBC playback follows a selection menu displayed on your TV screen.

The "MENU ON" function is the PBC function.



1 Start playing a VIDEO CD with "MENU ON."

The menu for your selection appears.

2 Press ↑/↓ to select the item number you want.

You can also use the number buttons to select the item number and track.

3 Press ENTER.

4 Follow the instructions in the menu for interactive operations.

Refer to the instructions supplied with the disc, as the operating procedure may differ depending on the VIDEO CD.

continued

To return to the menu

Press ↶ RETURN.

To play using "MENU OFF"

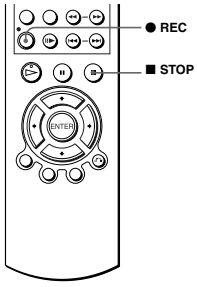
Press MENU to select "MENU OFF."
When "MENU OFF" is selected, the DVD player starts continuous play. You cannot play still pictures such as a menu.
To return to "MENU ON," press MENU to select "MENU ON."

Note

- Depending on the VIDEO CD, "Press ENTER" in step 3 may appear as "Press SELECT" in the instructions supplied with the disc. In this case, press ▷ PLAY.

Setting the recording duration time VHS

After you have started recording, you can have the VCR stop recording automatically after a specified duration.



1 While recording, press ● REC.

2 Press ● REC repeatedly to set the duration time.

Each press advances the time as follows.

→ 0:30 → 1:00 → 1:30 → 2:00 → 2:30 → 3:00 → 3:30 → 4:00 → **Normal recording**

The tape counter decreases minute by minute to 0:00, then the VCR stops recording.

To extend the duration

Press ● REC repeatedly to set a new duration time.

To cancel the duration

Press ● REC repeatedly until the ◴ indicator disappears and the VCR returns to normal recording mode.

To stop while recording

Press ■ STOP.

Note

- You cannot display the current tape time in the display window when setting the recording duration time.

Recording stereo and bilingual programs

VHS

Recording stereo programs

When you receive a program broadcast in stereo, press AUDIO to display "Hi-Fi" on the TV screen. You can also select "Left," "Right," or "Mono." If there is noise in the stereo program, select "Mono." The sound will be recorded in monaural (on both hi-fi and normal audio tracks) but with less noise.

Recording bilingual programs

Press AUDIO to display "SAP" on the TV screen. When a SAP (Second Audio Program) is received, "SAP" appears on the TV screen. When MAIN is selected, the VCR records only the main sound.

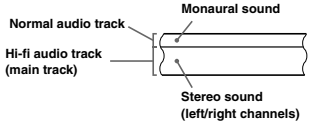
Selecting the sound during playback

During playback, press AUDIO to select the sound you want.

To listen to	On-screen display	Display window
Stereo	Hi-Fi	STEREO indicator
Left channel	Left	STEREO indicator
Right channel	Right	STEREO indicator
Monaural sound on the normal audio track	Mono	No indicator

How sound is recorded on a video tape

The VCR records sound onto two separate tracks. Hi-fi audio is recorded onto the main track along with the picture. Monaural sound is recorded onto the normal audio track along the edge of the tape.

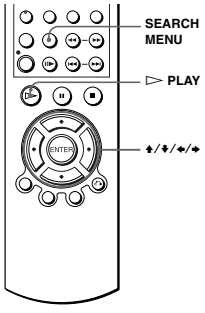


Notes

- To play a tape in stereo, you must use the A/V connections.
- When you play a tape recorded in monaural, the sound is heard in monaural regardless of the AUDIO setting.

Searching using various functions VHS

The VCR automatically marks the tape with an index signal at the point where each recording begins.
You can easily find a specific point using various search functions.

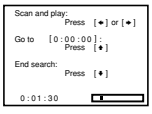


To search using the index function (Scan and Play)

The VCR automatically marks the tape with an index signal at the point where each recording begins. Use these signals as references to find a specific recording.

1 Insert an indexed tape into the VCR.

2 Press SEARCH MENU.



3 Press → to scan ahead, or ← to scan backwards.

The VCR searches and then plays back for about five seconds.

4 Press ▷ PLAY to view that program.

If you do not press ▷ PLAY, the VCR automatically searches for the next index mark, or until it reaches the end of the tape.

continued

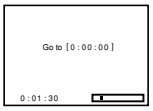
To search for the counter 0:00:00 point

To mark a point on the tape that you want to find later, reset the tape counter to "0:00:00."
The VCR automatically fast-forwards or rewinds to the 0:00:00 point on the tape counter.

1 Press SEARCH MENU.

2 Press ↑.

The VCR starts searching and automatically stops at the 0:00:00 point.



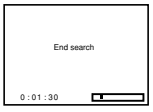
To search for a blank portion of the tape

The VCR automatically searches for the beginning of a blank portion. You can easily find a point you can start recording from.

1 Press SEARCH MENU.

2 Press ↓.

The VCR starts searching and automatically stops at the beginning of a blank space. If no blank space is found, the VCR reaches the end and the tape will be ejected.



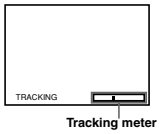
Note

- Once in recording mode, if the VCR is put in pause and then released to start the recording, no index mark will be inserted. An index mark will be inserted if the channel is changed while VCR is put in pause.

Adjusting the picture (tracking) VHS

Although the VCR automatically adjusts the tracking when playing a tape, distortion may occur if the recording is in poor condition. In this case, manually adjust the tracking.

Press TRACKING +/– to display the tracking meter. The distortion should disappear as you press one of the two tracking buttons.
To resume automatic tracking adjustment, eject the tape and reinsert it.



Tracking meter

Note

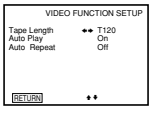
- The auto tracking adjustment cannot be guaranteed to work with tapes recorded in the LP mode on other VCRs.

Changing menu options VHS

1 Press SET UP when the DVD player is in stop mode.

2 Press ↑/↓/←/→ to select (Video Function Setup), then press ENTER.

The "VIDEO FUNCTION SETUP" menu appears.



3 Press ↑/↓ to select the option to change.

4 Press ←/→ to change the setting.

5 Press ↩ RETURN repeatedly to exit the menu.

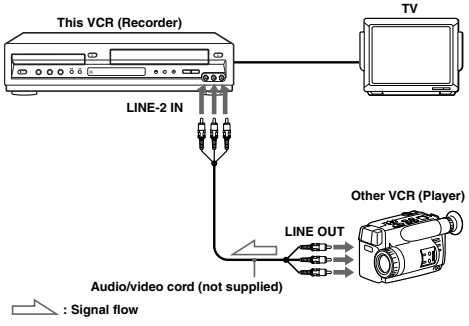
Menu choices

The default settings are indicated in bold print.

Menu option	Set this option to
Tape Length	• **T-120** when using a T-120 or shorter length tape. • T-160 when using a T-160 length tape. • T-180 when using a T-180 or longer length tape.
Auto Play	• **On** to start playback automatically, when you insert a tape with its safety tab removed. • Off to turn off Auto play. You need to press ▷ PLAY to start playback, even if you insert a tape with its safety tab removed.
Auto Repeat	• On to play back a tape repeatedly. The VCR rewinds a tape to the beginning and restarts playback automatically. • **Off** to turn off Auto repeat.

Editing with another VCR VHS

How to connect to record on this VCR



Notes

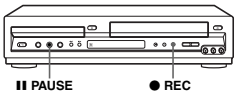
- Make sure you connect the plugs to jacks of the same color.
- If the other VCR is a monaural type and connected to this VCR's LINE-2 IN jacks, connect the audio plug to the AUDIO L (white) jack. The sound is recorded on both right and left channels. If you connect to the AUDIO R (red) jack, the sound is recorded only on the right channel.
- If you connected this VCR to both the LINE IN and LINE OUT jacks of the other VCR, select the input correctly to prevent a humming noise.
- You can use the LINE IN 1 jacks for editing. If the other VCR is a monaural type the sound is recorded only on the channel whose jack is connected to the audio plug. To record on both right and left channels, connect the audio plugs to the AUDIO R/L jacks using a VMC-910MS audio/video cord (not supplied).

continued

Operation (when recording on this VCR)

Before you start editing

- Turn on the VCR and the TV and set it to the video channel.
- Press INPUT SELECT or CH +/– to display “LINE 1” or “LINE 2” in the display window.
- Press SP/EP to select the tape speed, SP or EP.



1 Insert a source tape with its safety tab removed into the other (playback) VCR. Search for the point to start playback and set it to playback pause.

2 Insert a tape into this (recording) VCR. Search for the point to start recording and press ❚❚ PAUSE.

3 Press ● REC on this VCR to set it to recording pause.

4 To start editing, press the ❚❚ PAUSE buttons on both VCRs at the same time.

To stop editing

Press the ■ STOP buttons on both VCRs.

Tip

- To cut out unwanted scenes while editing, press ❚❚ PAUSE on this VCR when an unwanted scene begins. When it ends, press ❚❚ PAUSE again to resume recording.

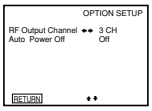
General setup information

Changing setup options

1 Press SET UP when the DVD player is in stop mode.

2 Press ↑/↓/←/→ to select (Option setup), then press ENTER.

The “OPTION SETUP” menu appears.



3 Press ↑/↓ to select the option to change.

4 Press ←/→ to change the setting.

5 Press RETURN repeatedly to exit the menu.

If you have changed the RF Output Channel, a confirmation message appears.

Press ENTER to confirm the changed channel.

Menu choices

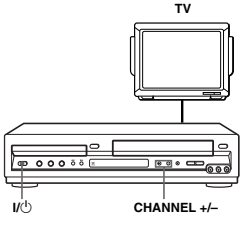
Initial settings are indicated in bold print.

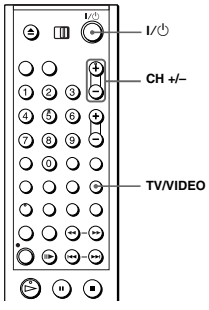
Menu option	Set this option to
RF Output Channel	• **3CH** when using channel 3 to receive the VCR signal. • 4CH when using channel 4 to receive the VCR signal. For details, see page 88.
Auto Power Off	• 1Hr to turn off the VCR automatically one hour after the last operation. • 2Hr to turn off the VCR automatically two hours after the last operation. • **Off** to set no specific time to turn off.

continued

Setting the RF Output channel

When connecting the DVD-VCR to the TV using only the antenna cable, you must set the RF Output channel in the “OPTION SETUP” menu so that the TV can receive the correct signal from the DVD-VCR.





1 Set the RF Output channel to “3CH” or “4CH” (see page 87 to set the channel), whichever channel is not used in your area. If both are used, set the switch to either channel.

2 Press I/⏻ to turn on the DVD-VCR.

3 Press TV/VIDEO to turn on “VCR” in the DVD-VCR’s display window.

4 Press CH +/– to display a channel number in the display window.

Select an active channel number in your area.

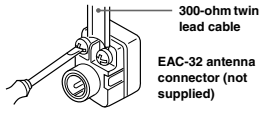
5 Turn on your TV and set it to the channel you selected in step 1 (3CH or 4CH).

The channel you selected in step 4 appears on the TV screen. If the channels change when you press CH +/–, you have made the correct setting.

Whenever you use the DVD-VCR, set the TV to the channel selected in step 1.

Attaching the external antenna connector

When using a 300-ohm twin lead cable for a VHF/UHF antenna, use the EAC-32 antenna connector (not supplied) to connect the antenna to the DVD-VCR.



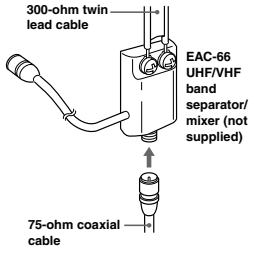
1 Loosen the screws on the antenna connector.

2 Wind the twin leads around the screws on the antenna connector.

3 Retighten the screws.

Attaching a UHF/VHF band mixer

When using both a 75-ohm coaxial cable and a 300-ohm twin lead cable for a VHF/UHF antenna, use the EAC-66 UHF/VHF band separator/mixer (not supplied) to connect the antenna to the DVD-VCR.



1 Loosen the screws on the mixer.

2 Wind the twin leads around the screws on the mixer.

3 Retighten the screws.

4 Connect the 75-ohm coaxial cable to the mixer.

Troubleshooting

If you have any questions or problems not covered below, please consult your nearest Sony dealer.

General Troubleshooting

	Symptom	Remedy
Power	The I/⏻ switch does not function.	• Connect the AC power cord securely.
	The power is turned on but the DVD-VCR does not operate.	• Moisture condensation has occurred. Turn the power off, unplug the AC power cord and leave the DVD-VCR to dry for over three hours.
Clock	The clock has stopped and "–:--" appears in the display window.	• The clock stops if the DVD-VCR is disconnected from the wall outlet. Reset the clock (and timer).
Others	The remote commander does not function.	• Make sure you are pointing the remote commander at the remote sensor on the DVD-VCR. • Replace all the batteries in the remote commander with new ones if they are weak. • Make sure the TV / DVD·VIDEO switch is set correctly. • Select correctly VIDEO or DVD with the SELECT DVD/VIDEO button.
	The tracking meter does not appear on the screen.	• The recording condition of the tape is very poor and tracking cannot be adjusted.
	You cannot control other TVs.	• Set your TV's code number. The code number may change when you replace the batteries of the remote commander.

DVD Troubleshooting

	Symptom	Remedy
Picture	There is no picture/picture noise appears.	• Re-connect the connecting cord securely. • The connecting cords are damaged. • Check the connection to your TV (page 14) and switch the input selector on your TV so that the signal from the player appears on the TV screen. • The disc is dirty or flawed. • If the picture output from your player goes through your VCR to get to your TV or if you are connected to a combination TV/VIDEO player, the copy-protection signal applied to some DVD programs could affect picture quality. If you still experience problems even when you connect your player directly to your TV, please try connecting your player to your TV's S VIDEO input (page 47).
	Even though you set the aspect ratio in "TV Type" of the "SCREEN SETUP" menu the picture does not fill the screen.	• The aspect ratio of the disc is fixed on your DVD.
	There is no picture from your VCR connected to the LINE IN jacks.	• The DVD player must be in standby mode to view pictures from your VCR.

	Symptom	Remedy
Sound	There is no sound.	• Re-connect the connecting cord securely. • The connecting cord is damaged. • The player is connected to the wrong input jack on the amplifier (receiver) (page 15). • The amplifier (receiver) input is not correctly set. • The player is in pause mode or in Slow-motion Play mode. • The player is in fast forward or fast reverse mode. • If the audio signal does not come through the DIGITAL AUDIO OUT (OPTICAL or COAXIAL) jack, check the audio settings (page 49).
	Sound is noisy.	• When playing a CD with DTS sound tracks, noise will come from the LINE OUT L/R (AUDIO) jacks (page 32) or DIGITAL OUT (OPTICAL or COAXIAL) jack.
	The sound volume is low.	• The sound volume is low on some DVDs. The sound volume may improve if you set "Audio DRC" to "TV Mode" (page 50).
Operation	The disc does not play.	• The disc is turned over. • Insert the disc with the playback side facing down on the disc tray. • The disc is skewed. • The player cannot play certain discs (page 8). • The region code on the DVD does not match the player. • Moisture has condensed inside the player (page 3). • The player cannot play CD-Rs, CD-RWs, DVD-Rs, or DVD-RWs (video mode) that are not finalized (page 9). • Make sure the TV / DVD·VIDEO switch is set correctly. • Select correctly VIDEO or DVD with SELECT DVD/VIDEO button.
	The MP3 audio track cannot be played (page 74).	• The DATA CD is not recorded in the MP3 format that conforms to ISO9660 Level 1/Level 2 or Joliet. • The MP3 audio track does not have the extension ".MP3." • The data is not formatted in MP3 even though it has the extension ".MP3." • The data is not MPEG1 Audio Layer 3 data. • The player cannot play audio tracks in MP3PRO format.
	The title of the MP3 audio album or track is not correctly displayed.	• The player can only display numbers and alphabet. Other characters are displayed as asterisks.
	The disc does not start playing from the beginning.	• Program play, random play, or repeat play, has been selected (pages 65, 67, 68). • Resume play has taken effect (page 31).
	The player starts playing the disc automatically.	• The disc features an auto playback function.
	Playback stops automatically.	• While playing discs with an auto pause signal, the player stops playback at the auto pause signal.
	You cannot perform some functions such as stop, search, slow-motion play, repeat play, random play, or program play.	• Depending on the disc, you may not be able to do some operations. See the operating manual that comes with the disc.

continued

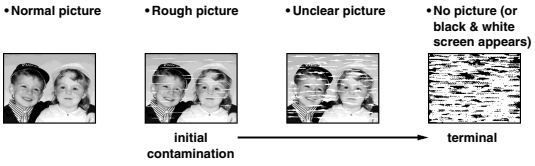
	Symptom	Remedy
Operation	The language for the sound track cannot be changed.	• Try using the DVD's menu instead of the direct selection button on the remote (page 60). • Multilingual tracks are not recorded on the DVD being played. • The DVD prohibits the changing of the language for the sound track.
	The subtitle language cannot be changed or turned off.	• Try using the DVD's menu instead of the direct selection button on the remote (page 60). • Multilingual subtitles are not recorded on the DVD being played. • The DVD prohibits the changing of the subtitles.
	The angles cannot be changed.	• Try using the DVD's menu instead of the direct selection button on the remote (page 60). • Multi-angles are not recorded on the DVD being played. • The DVD prohibits changing of the angles.
	The player does not operate properly.	• When static electricity, etc., causes the player to operate abnormally, unplug the player.

VCR Troubleshooting

	Symptom	Remedy
Playback	The playback picture does not appear on the TV screen.	• Make sure the TV is set to the channel for the VCR. If you are using a monitor, set it to video input.
	The picture is not clear.	• Adjust the tracking with the TRACKING +/– buttons. • The video heads are dirty (see the last page of "Troubleshooting"). Clean the video heads using the Sony T-25CLD or T-25CLDR video head cleaning cassette. If these cleaning cassettes are not available in your area, have the heads cleaned at your nearest Sony dealer (a standard service fee will be charged). Do not use a commercially available liquid type cleaning cassette, as it may damage the video heads. • The video heads may have to be replaced. Consult your local Sony dealer for more information.
	The picture rolls vertically during picture search.	• Adjust the vertical hold control on the TV or monitor.
	The picture has no sound.	• The tape is defective. • If you made A/V connections, check the audio cord connection.
Recording	A TV program does not appear on the TV screen.	• Make sure the TV is set to the channel for the VCR. If you are using a monitor, set it to video input. • Select the correct source with the INPUT SELECT or CH +/– buttons. Select a channel number when recording TV programs; select "L1" or "L2" when recording from other equipment.
	TV reception is poor.	• Adjust the TV antenna.
	The tape starts playing as soon as it is inserted.	• The safety tab has been removed. To record on this tape, cover the tab hole.
	The tape is ejected when you press ● REC.	• Check that the safety tab has not been removed.
	Nothing happens when you press ● REC.	• Make sure the tape is not at its end.
Timer recording	The timer does not operate.	• Check that the clock is set. • Make sure a tape has been inserted. • Check that the safety tab has not been removed. • Make sure the tape is not at its end. • Make sure a program has been set for timer recording. • Make sure your timer settings are past the current time. • Check that the cable box is turned on. • The clock stops if the DVD-VCR is disconnected from the wall outlet for more than one minute. Reset the clock and timer. • Turn the power off and unplug the AC power cord.
Others	A tape cannot be inserted.	• Check that a tape is not already in the tape compartment.
	The VCR mecanism needs to be cleaned.	• Clean the cabinet, panel and controls with a dry, soft cloth, or a soft cloth slightly moistened with a mild detergent solution. Do not use any type of solvent, such as alcohol or benzine.

continued

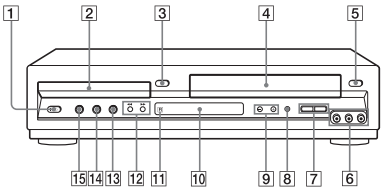
Symptoms caused by contaminated video heads



Index to parts and controls

Refer to the pages indicated in parentheses ( ) for details.

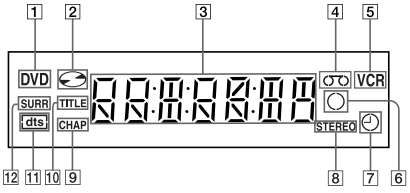
Front panel



1 I/⏻ POWER switch (12) (35)
2 Disc tray (30)
3 ⏏ (open/close) button (30) (31)
4 Tape compartment (37)
5 ⏏ (eject) button (35)
6 LINE-2 IN VIDEO/AUDIO L/R jacks (85)
7 SELECT DVD/VIDEO (11)
8 ● REC (record) button (38)
9 CHANNEL +/– buttons (37)
10 Display window (31) (35)
11 Remote sensor
12 ◀◀ (rewind)/▶▶ (fast-forward) button (31) (35)
13 ■ (stop) button (31) (35)
14 ❚❚ (pause) button (31) (35)
15 ▷ (play) button (31) (35)

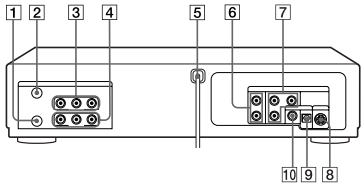
continued

Display window



1 DVD indicator (31)
2 Disc indicator (31)
3 Playing time/clock/current status indicator (31)
4 Tape indicator (35)
5 VCR indicator (35)
6 RECORD indicator (38)
7 TIMER indicator (41)
8 STEREO indicator (80)
9 CHAPTER indicator
10 TITLE indicator
11 DTS indicator (50)
12 SURROUND indicator (72)

Rear panel



DVD player and VCR

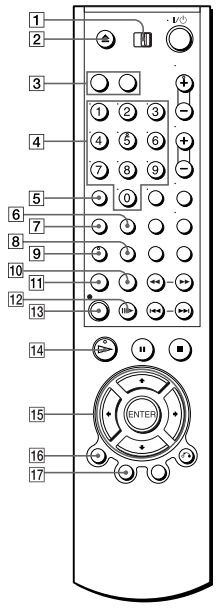
1 RF OUT (To TV) connector (16)
2 RF IN (From ANT.) connector (16)
3 LINE IN 1 VIDEO/AUDIO L/R jacks (15)
4 LINE OUT VIDEO/AUDIO L/R jacks (15)
5 AC power cord (14) (17) (19)

DVD player only

6 LINE OUT AUDIO L/R jacks (47)
7 COMPONENT VIDEO OUT Pr/Pb/Y jacks (48)
8 S VIDEO OUT jack (47)
9 DIGITAL AUDIO OUT jack (OPTICAL) (46)
10 DIGITAL AUDIO OUT jack (COAXIAL) (46)

continued

Remote commander



1 TV / DVD•VIDEO switch (11)

2 ⏏ button (30) (31) (35)
[for DVD] (open/close) button
[for VIDEO] (eject) button

3 SELECT DVD/VIDEO buttons (11)

4 Number buttons* (29)

5 CLEAR button (36) (41) (66)

6 SURROUND button (72)

7 SET UP button (21)

8 SUBTITLE/TIMER button (40) (63)
[for DVD] SUBTITLE button
[for VIDEO] TIMER button

9 AUDIO button* (71) (80)

10 BOOKMARK/SEARCH MENU button (69) (81)
[for DVD] BOOKMARK button
[for VIDEO] SEARCH MENU button

11 REPEAT/REPLAY button (35) (66)
[for DVD] REPEAT button
[for VIDEO] REPLAY button

12 II► PICTURE NAVI/SKIP button (31) (36) (64)
[for DVD] PICTURE NAVI button
[for VIDEO] SKIP button

13 ● REC (record) button (38)

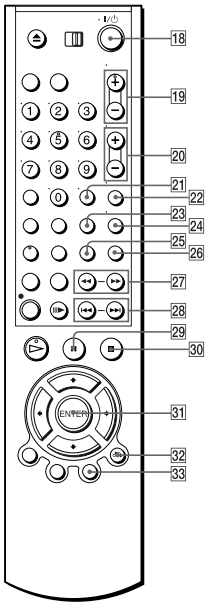
14 ▻ PLAY button* (31) (35)

15 ↑/↓/←/→ button (21)

16 DISPLAY button (33) (38)

17 TOP MENU button (60)

* Number 5, AUDIO and ▻ PLAY buttons have a tactile dot. Use the tactile dot as a reference when operating the DVD-VCR.



18 I/⏻ (power) switch (12) (35)

19 CH (channel)/TRACKING +/– buttons*1 (37) (83)

20 VOL (volume) +/– buttons (12)

21 ENTER button*2 (21)

22 MUTING/ZOOM button (12) (61)
[for DVD] ZOOM button
[for VIDEO] No function
[for Sony TV only] MUTING button

23 SP (Standard Play)/EP (Extended Play) button (38)

24 TV/VIDEO button (39)

25 ANGLE button (62)

26 INPUT SELECT button (39)

27 ◀◀/▶▶ SCAN/SLOW I► buttons (31) (35)
[for DVD] ◀◀ SCAN button
▶▶ SCAN button
SLOW I► button
[for VIDEO] ◀◀ (rewind) button
▶▶ (fast-forward) button
SLOW I► button

28 I◀◀ /▶▶I SHUTTLE PREV/NEXT button (31) (36)
[for DVD] I◀◀ PREV (previous) button
▶▶I NEXT (next) button
[for VIDEO] I◀◀ /▶▶I SHUTTLE button

29 ❚❚ PAUSE button (31) (35)

30 ■ STOP button (31) (35)

31 ENTER button*2 (21)

32 ↩ RETURN button (21)

33 MENU button (60)

*1 CH/TRACKING + button has a tactile dot. Use the tactile dot as a reference.

*2 The ENTER buttons 21 and 31 can be used interchangeably.

DVD AUDIO/SUBTITLE LANGUAGE

Language	Abbrevaiation
Korean	KOR
English	ENG
Chinese	CHI
Japanese	JPN
Russian	RUS
French	FRA
Spanish	ESP
German	DEU
Dutch	NLD
Italian	ITA
Hindi	IND
Arabic	ARA
Danish	DAN
Finish	FIN
Islandic	ISL
Hebrew	IWR
Norwegian	NOR
Portuguese	POR
Swedish	SVE
Turquish	TUR
Afrikaans	ZAF
Croatian	CRO
Czech	CZK
Greek	GRE
Hungarian	HUN
Indonesian	IDN
Malay	MAL
Polish	POL
Thai	THA
Vietnamese	VIE

2. Disassembly and Reassembly

2-1 Cabinet and PCB

2-1-1 Cabinet Top Removal

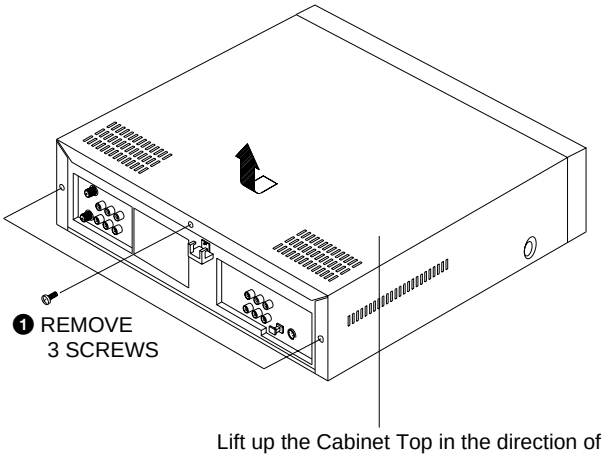


Fig. 2-1 Cabinet Top Removal

2-1-2 Bottom Cover Removal

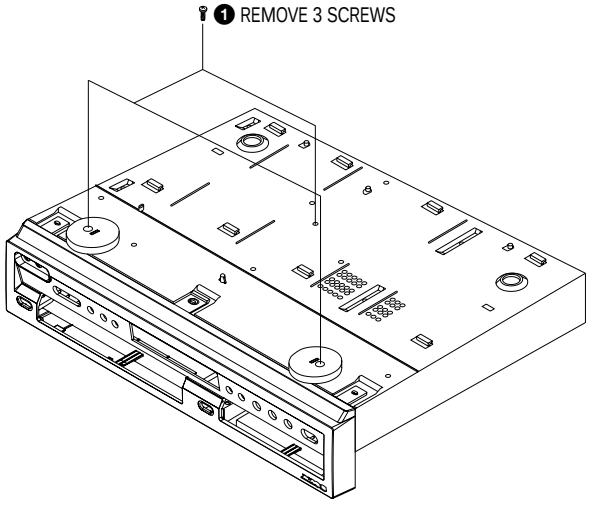
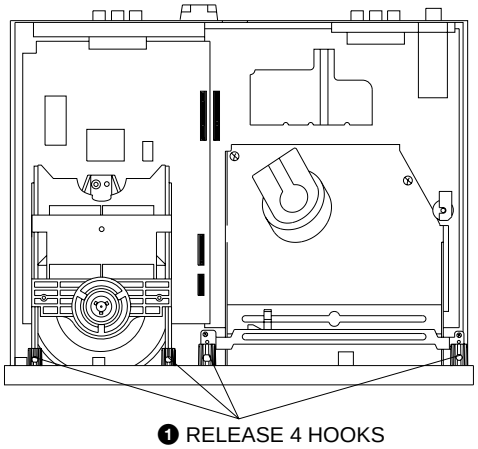


Fig. 2-2 Bottom Cover Removal

2-1-3 Ass'y Front Panel Removal



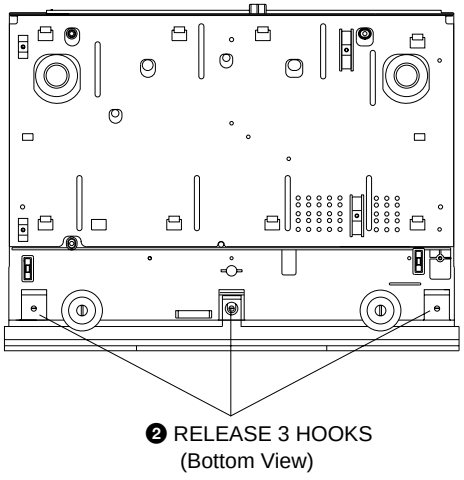


Fig. 2-3 Ass'y Front Panel Removal

2-1-4 Function-Timer PCB Removal

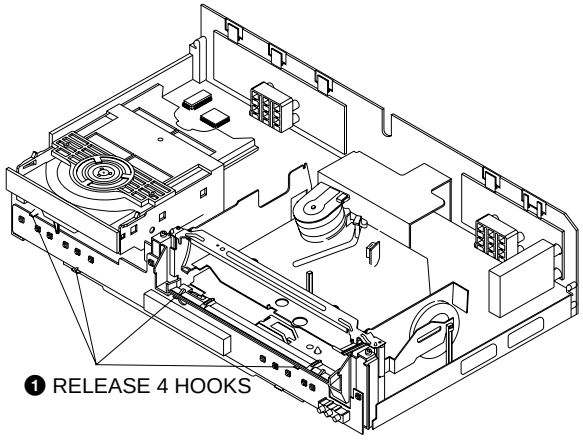


Fig. 2-4 Function-Timer PCB Removal

2-1-5 Chassis Removal

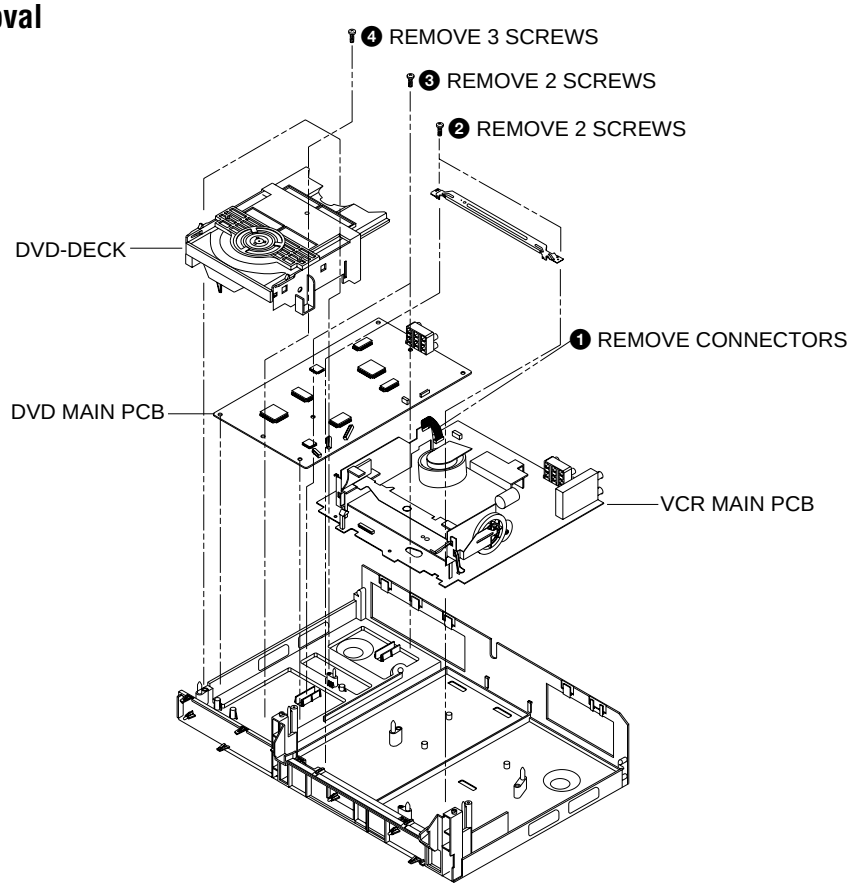


Fig. 2-5 Shassis Removal

2-1-6 VCR Main PCB Removal

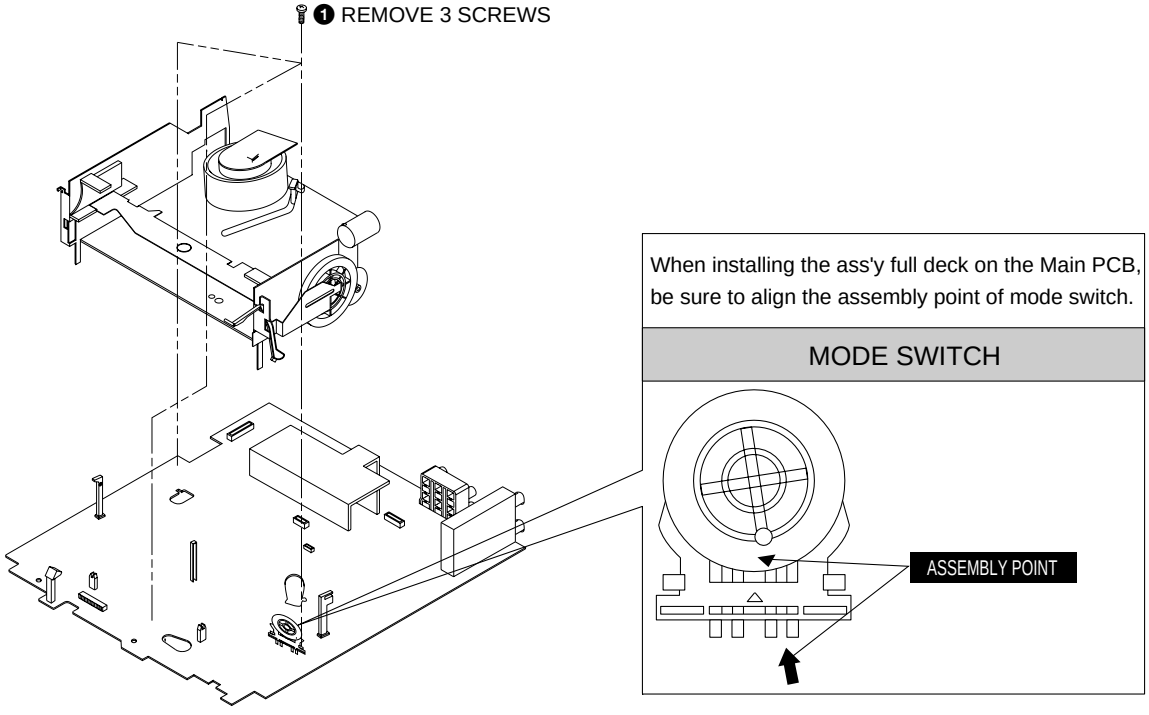

❶ REMOVE 3 SCREWS
When installing the ass'y full deck on the Main PCB, be sure to align the assembly point of mode switch.
MODE SWITCH
ASSEMBLY POINT

Fig. 2-6 VCR Main PCB Removal

2-2 DVD Deck

2-2-1 Tray Disc Removal

1) Insert a Screw Driver ❶ into Emergency Hole ❷ and push the Slider Housing ❸ in the direction arrow “A”.
2) When the Tray Disc ❹ comes out a little, pull it in the direction arrow “B” by hand.
3) Pull the Tray Disc ❹ to disassemble , while simultaneously pushing 2 Stoppers ❺ (left, right) in the direction arrow “C”, “D”.

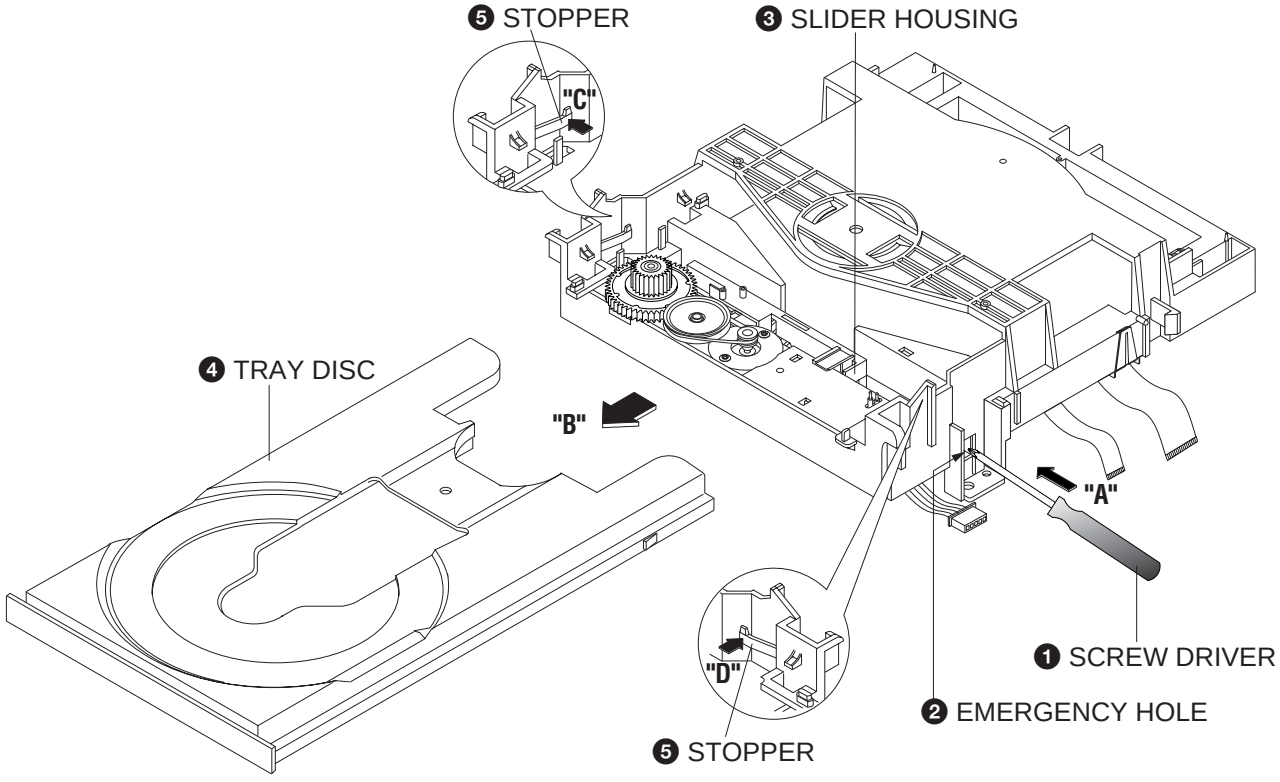


Fig. 2-7 Tray Disc Removal

2-2-2 Ass'y P/U Deck Removal

1) Disconnect DCN2 ❶, DCN2 ❷.
2) Lift down the Ass'y P/U Deck ❸ while simultaneously pushing 2 Hooks ❹, ❺ in the direction of arrow "A", "B".

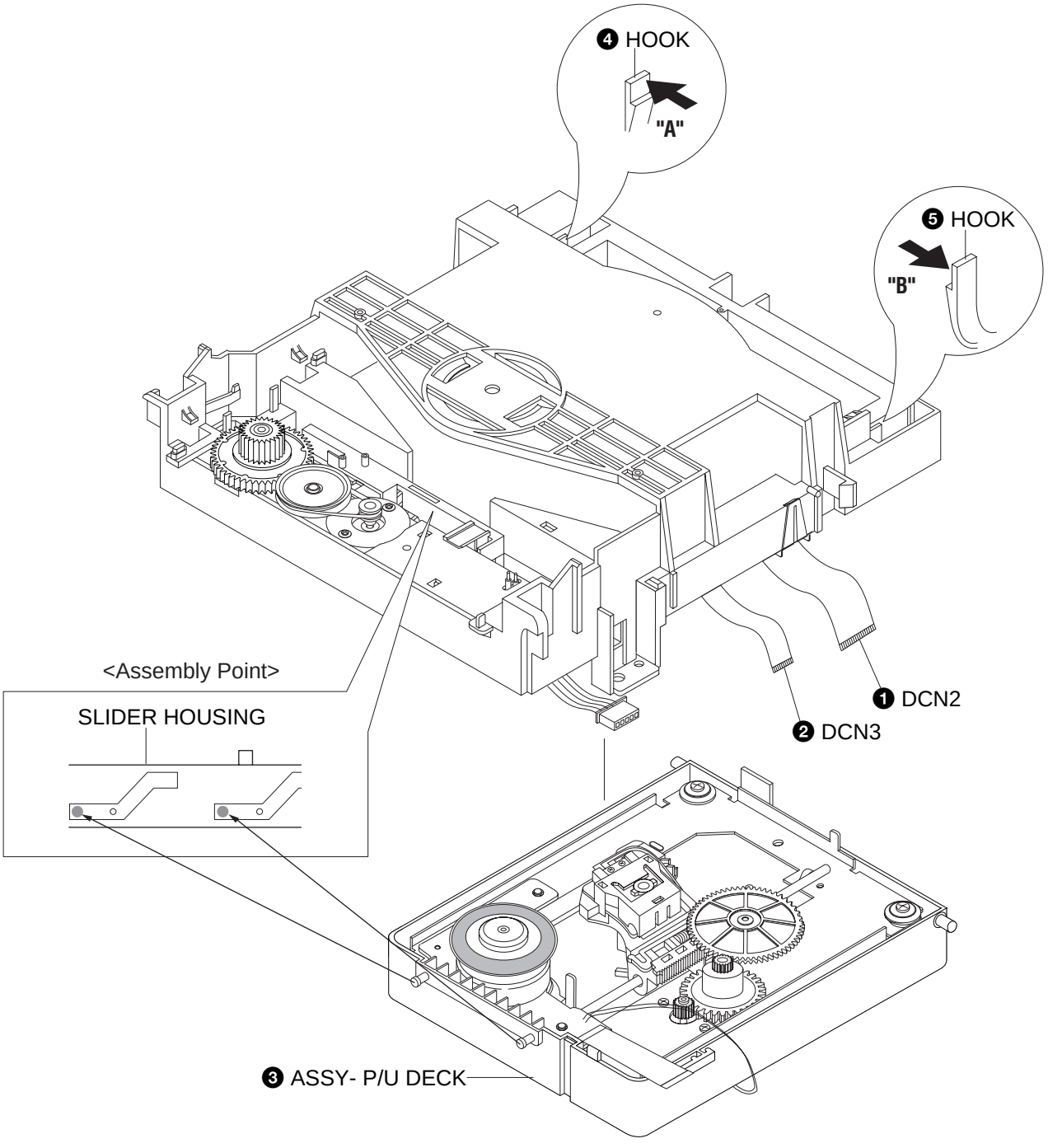


Fig. 2-8 Ass'y P/U Deck Removal

2-2-3 Housing Ass'y Removal

1) Remove Belt ❶.
2) Push the Hook ❷ in the direction arrow "A" and lift up Pulley Gear ❸.
3) Push the Slider Housing ❺ in the direction arrow "B" and lift up the Gear Tray ❹.
4) Lift up the Slider Housing ❺.
5) Remove the soldering ❻ of 2 points (Red, Black).
6) Remove 2 Screws ❼ and lift down the Motor Load Ass'y ❽.
7) Push the 2 Hooks ❾ bottom side in the direction arrow "C" and lift up the Housing PCB ❿.
8) Push the Hooks ⓫ and remove Deck PCB ⓬.

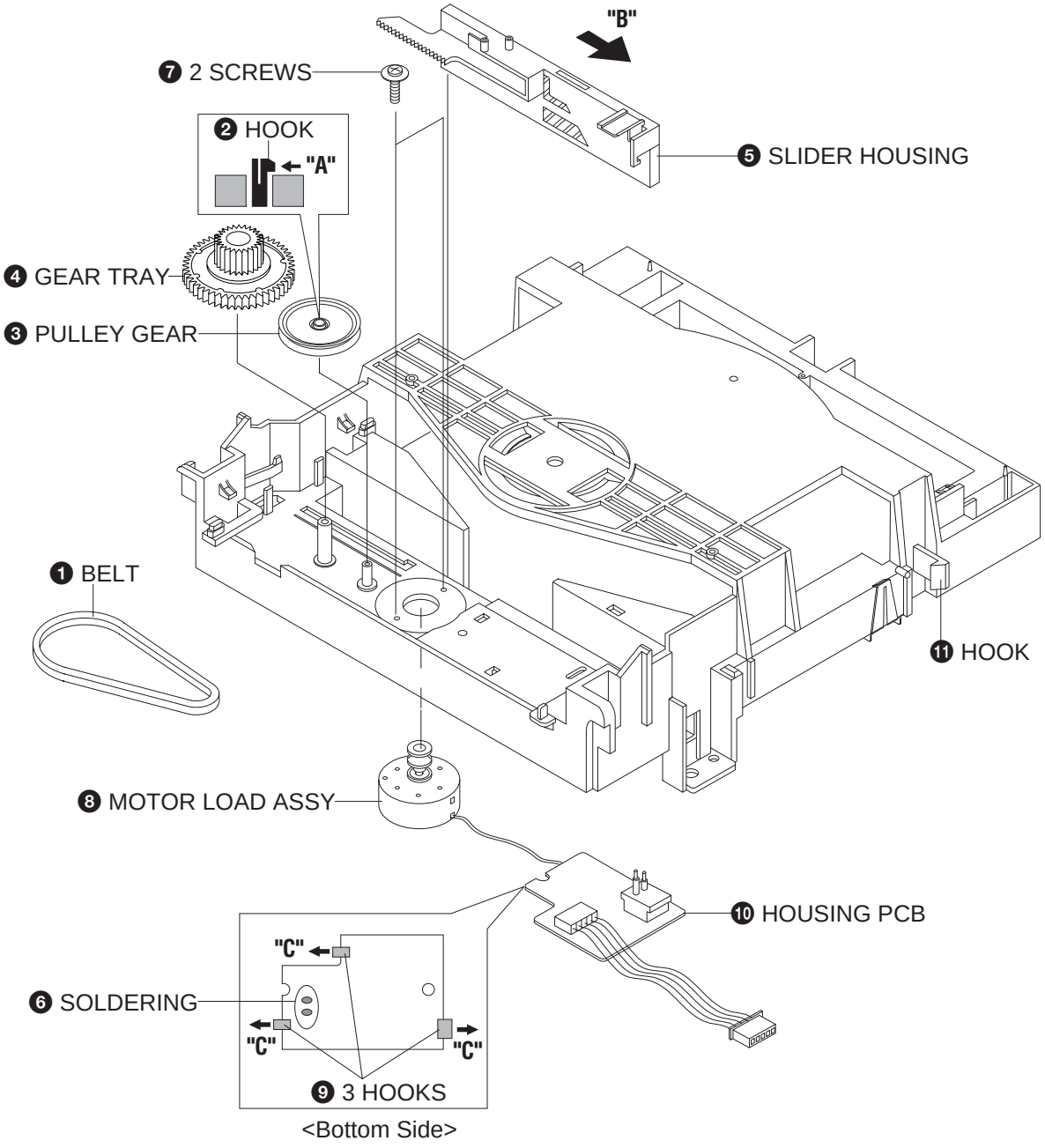


Fig. 2-9 Housing Ass'y Removal

2-2-4 Sub Chassis Removal

1) Remove the Soldering of Motor Feed (+, - wire) ❶.
2) Remove the 4 Screws ❷.
3) Lift up the Ass'y Brkt Deck ❸.

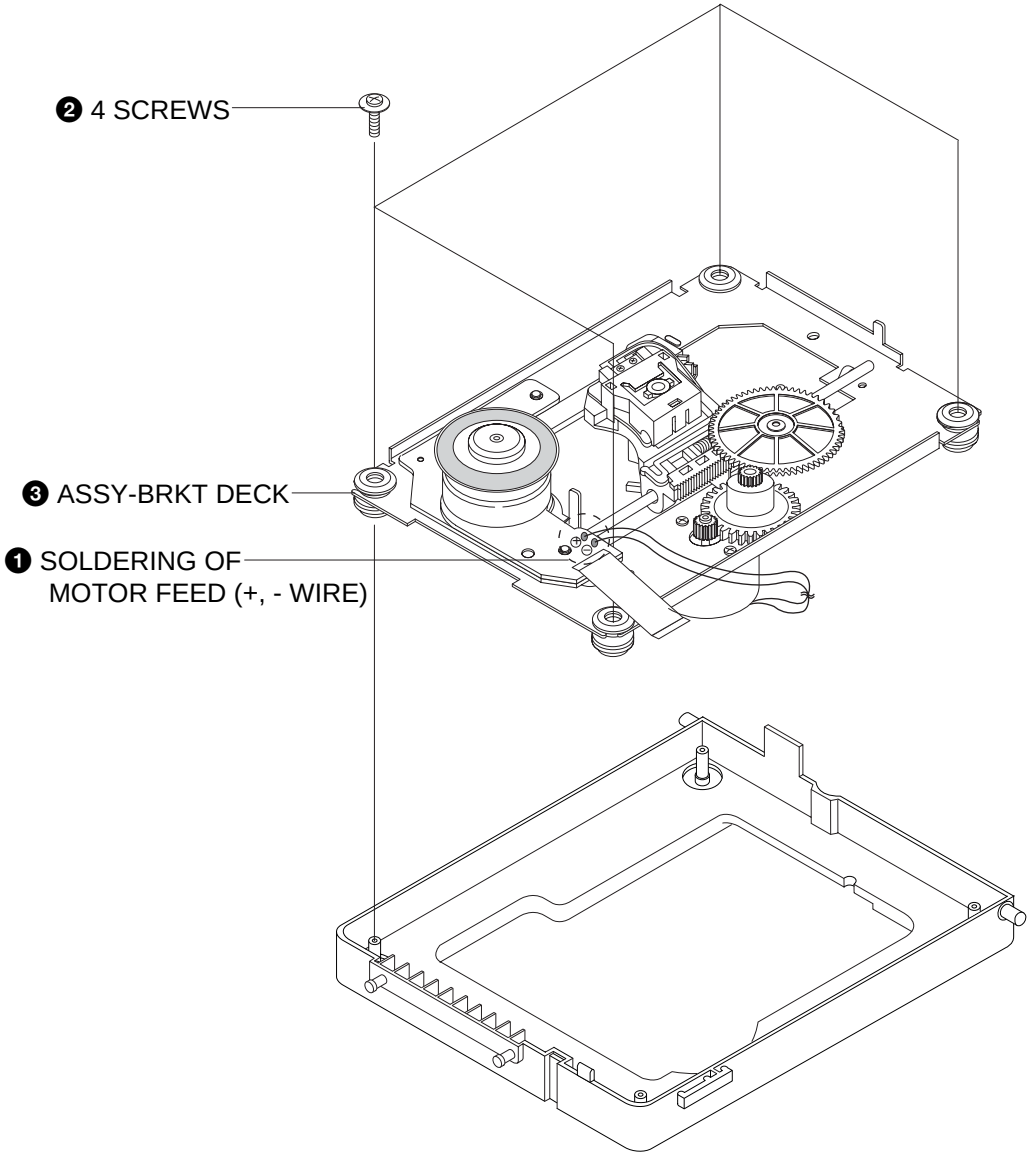


Fig. 2-10 Sub Chassis Removal

2-2-5 Ass'y Brkt Deck Removal

1) Remove Washer ❶.
2) Remove Gear Feed B ❷ , Gear Feed A ❸.
3) Remove 2 Screws ❹.
4) Remove Shaft Pick-Up ❺ and Pick-Up Assy ❻.
5) Remove 1 Screw ❼.
6) Remove 2 Screws ❽.
7) Remove 2 Spring Spindle ❾ and Motor Spindle Ass'y ❿.

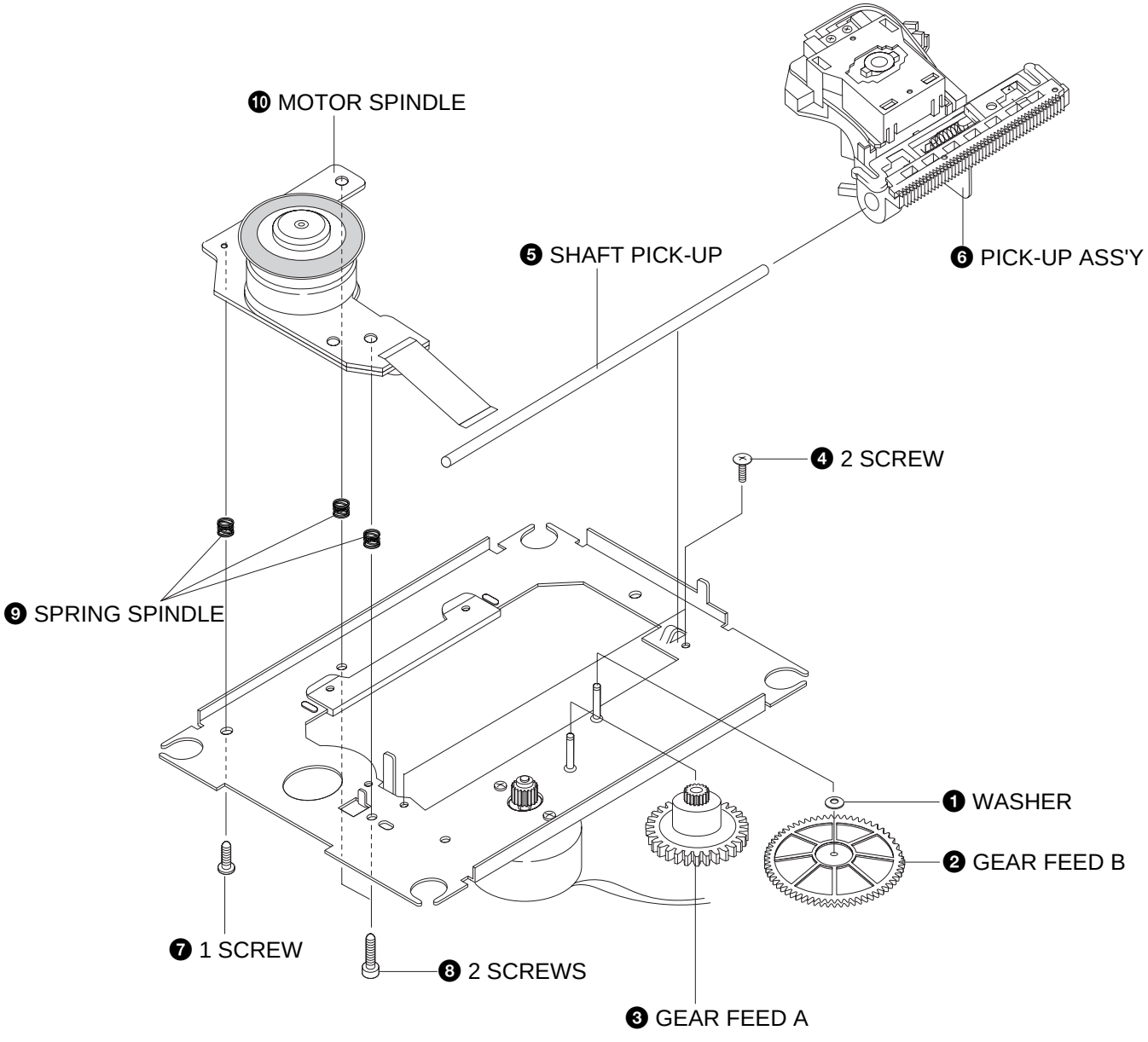


Fig. 2-11 Ass'y Brkt Deck Removal

2-3 Circuit Board Locations

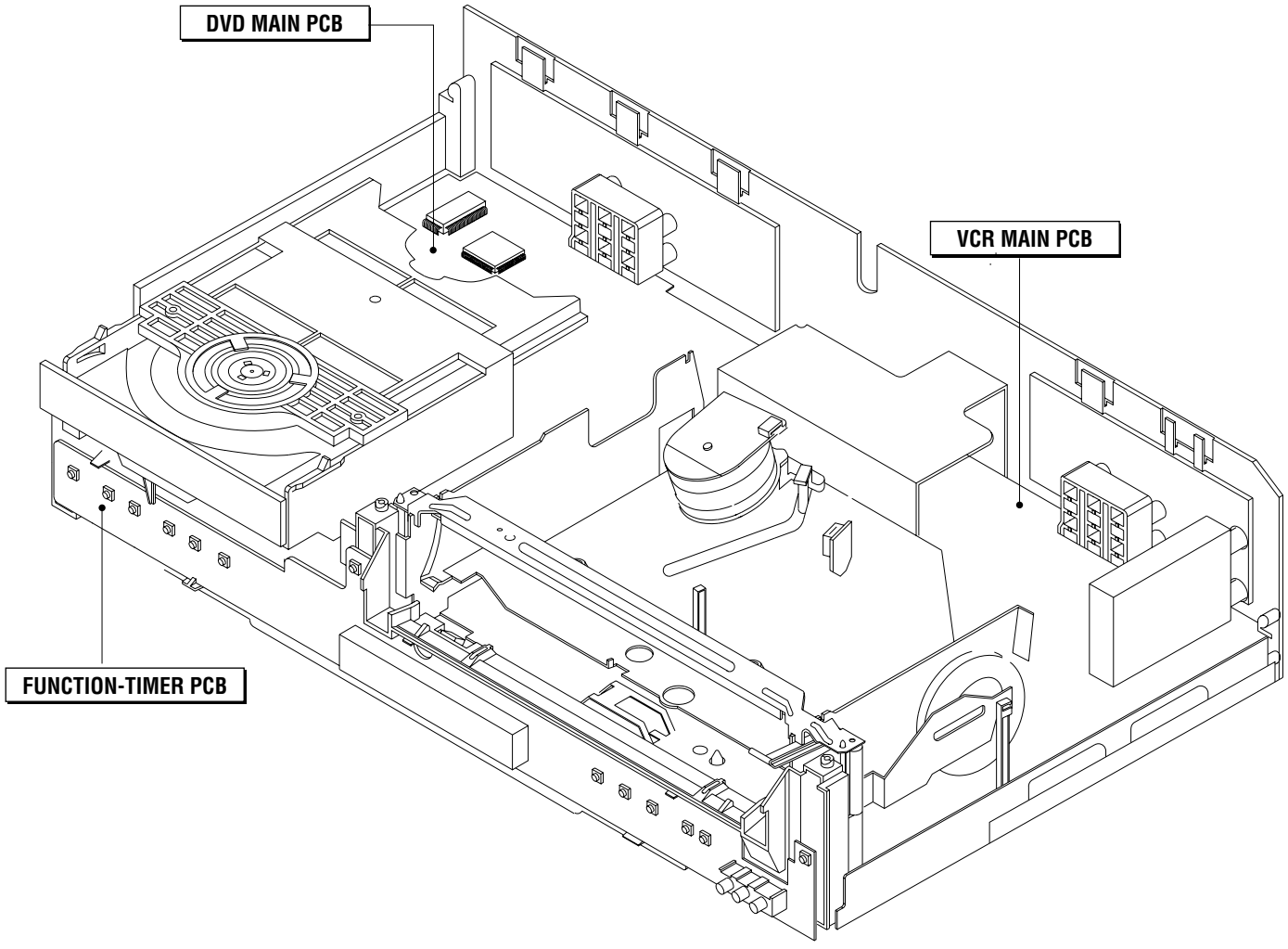
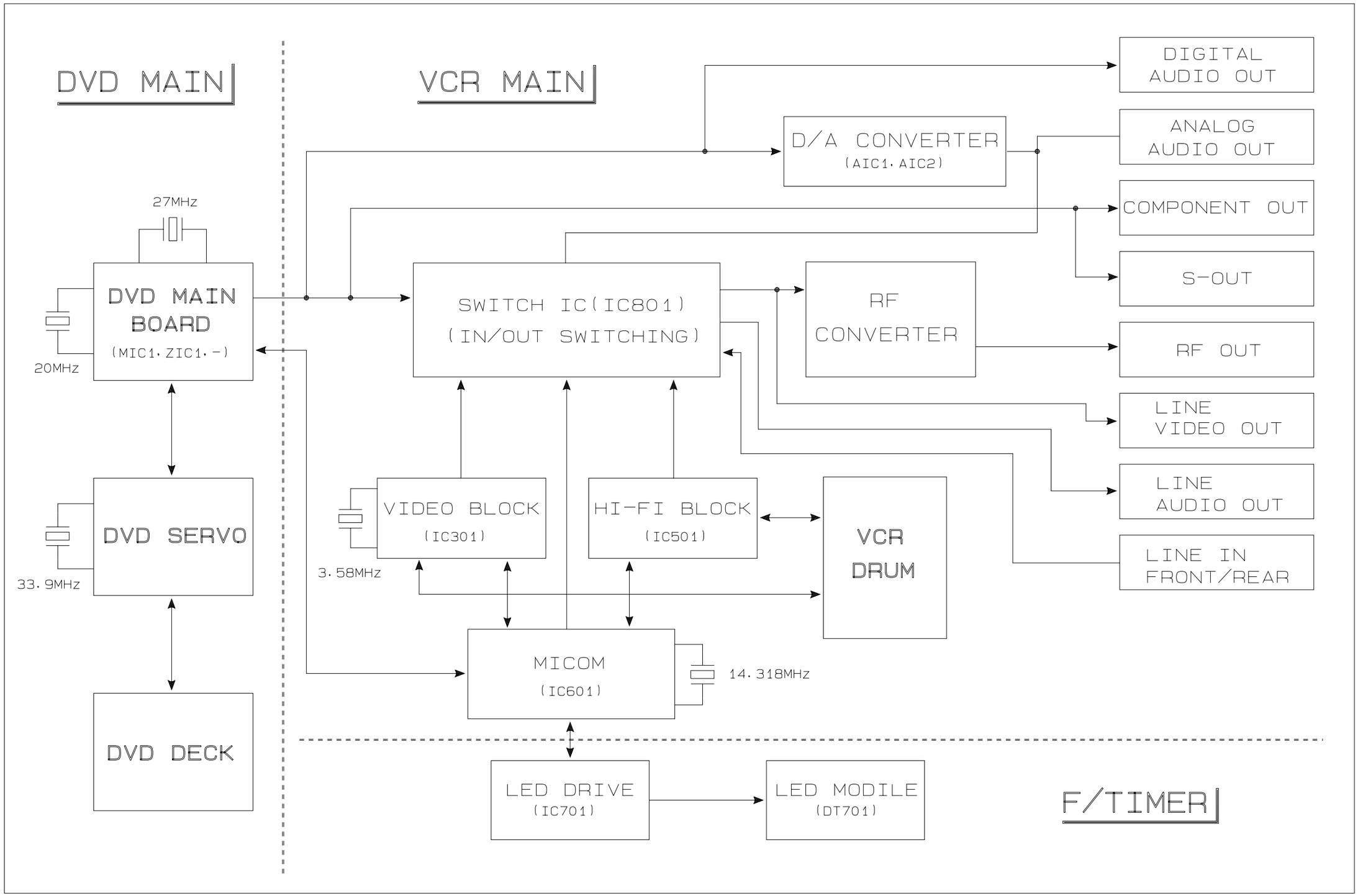


Fig. 2-12 Circuit Board Locations

3. Block Diagram



4. PCB Diagrams

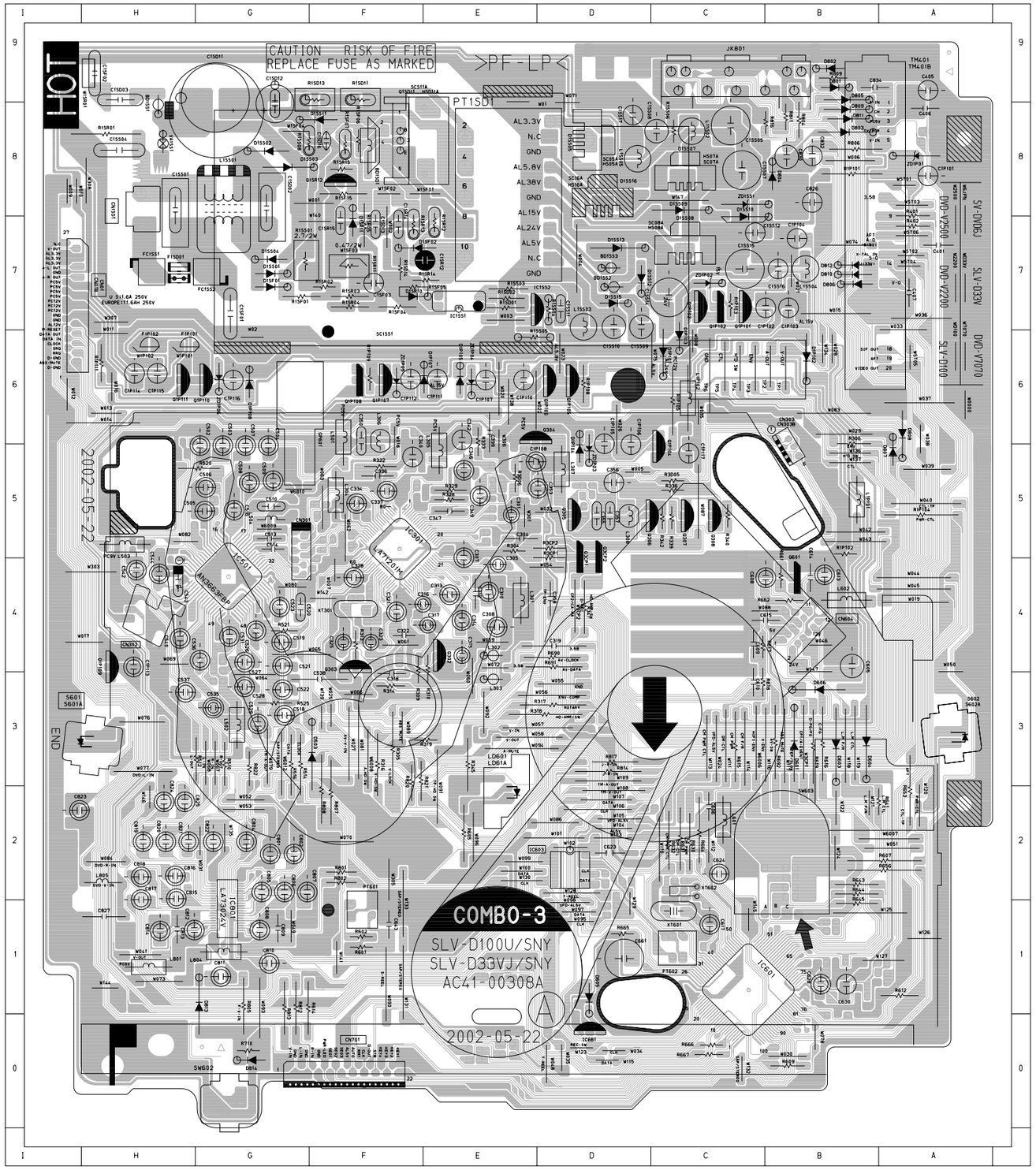
4-1 VCR Main ---------- 4-3

4-2 DVD Main ---------- 4-7

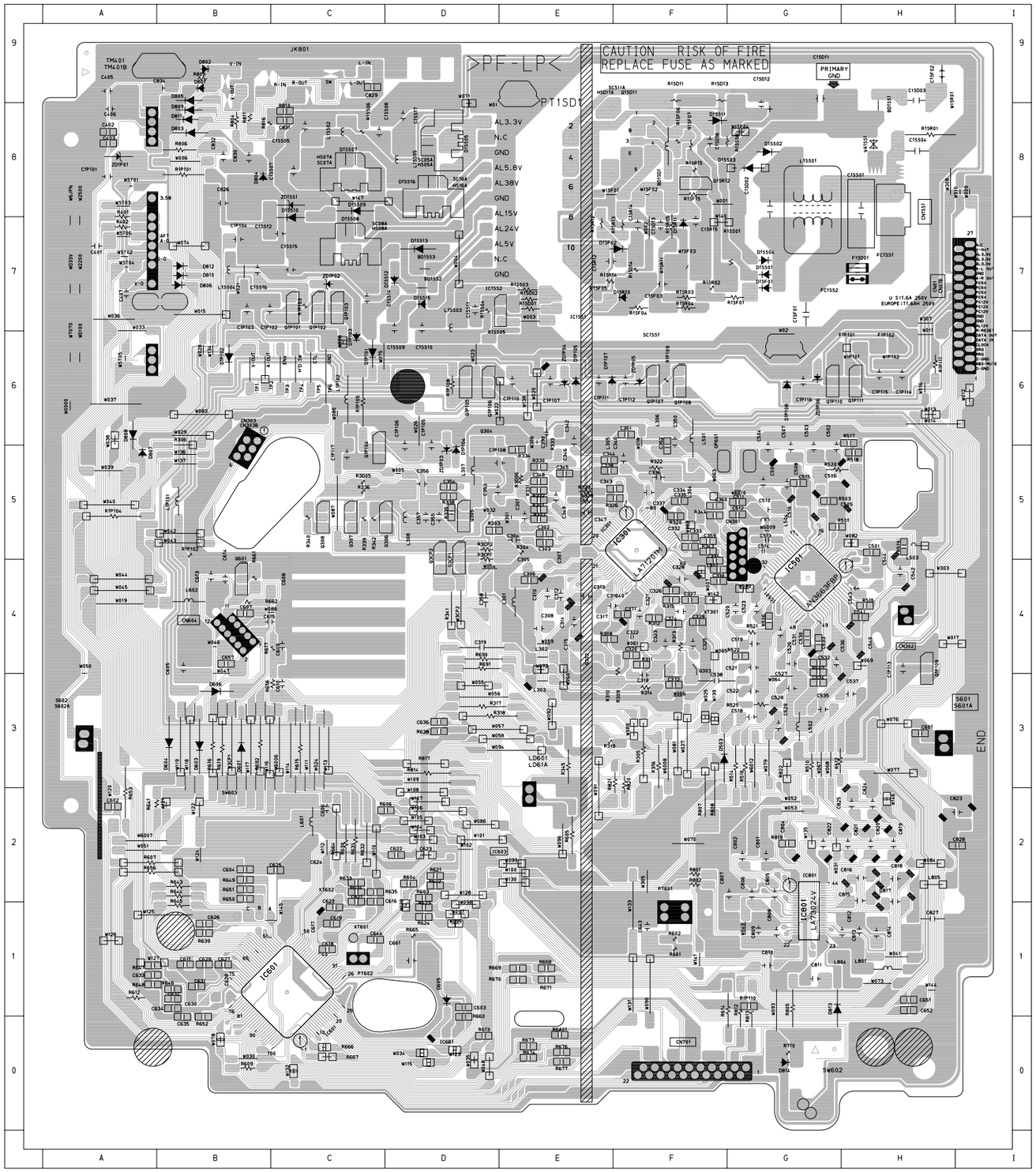
4-3 Function-Timer ---------- 4-9

4-1 VCR Main

COMPONENT SIDE

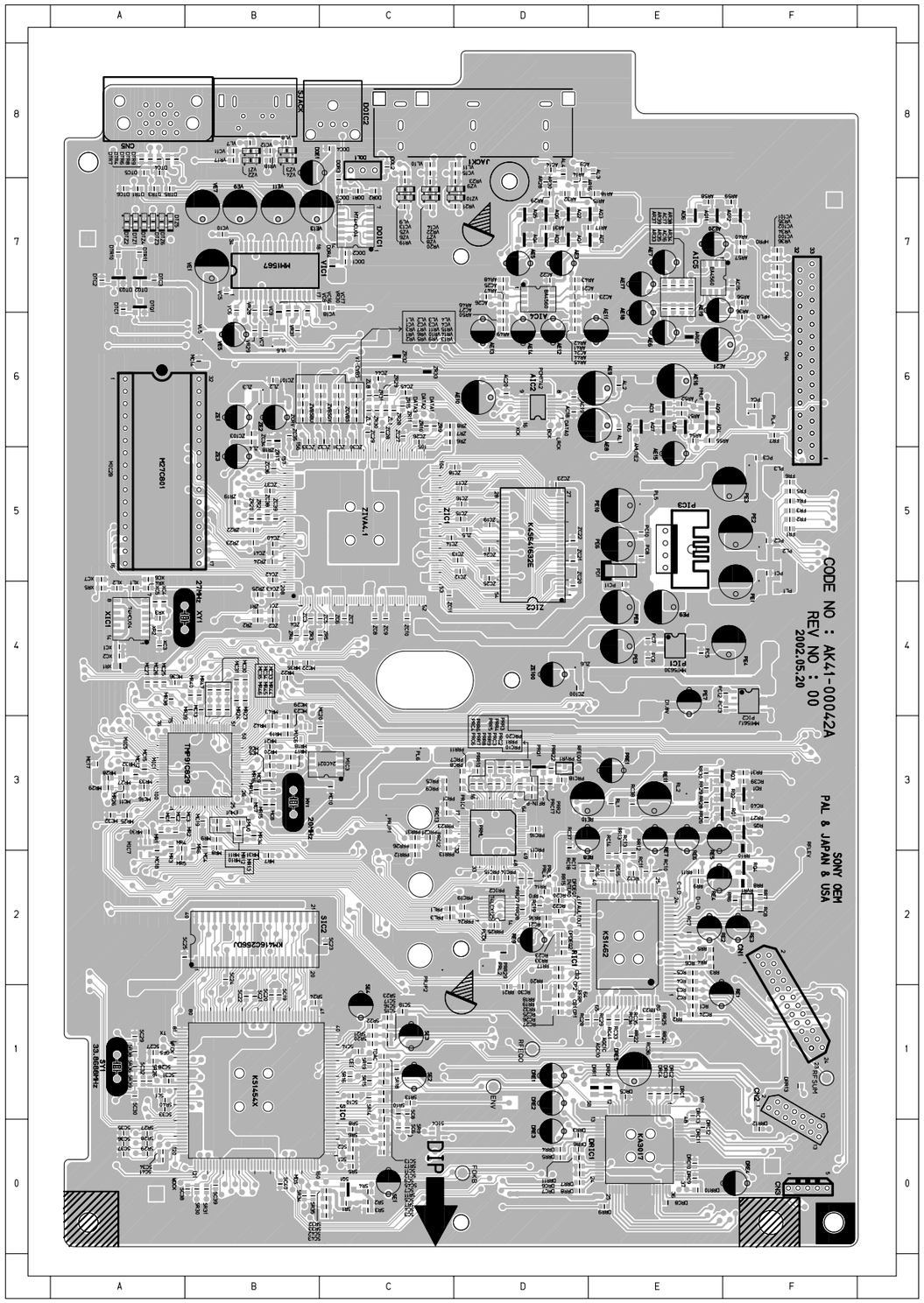


CONDUCTOR SIDE

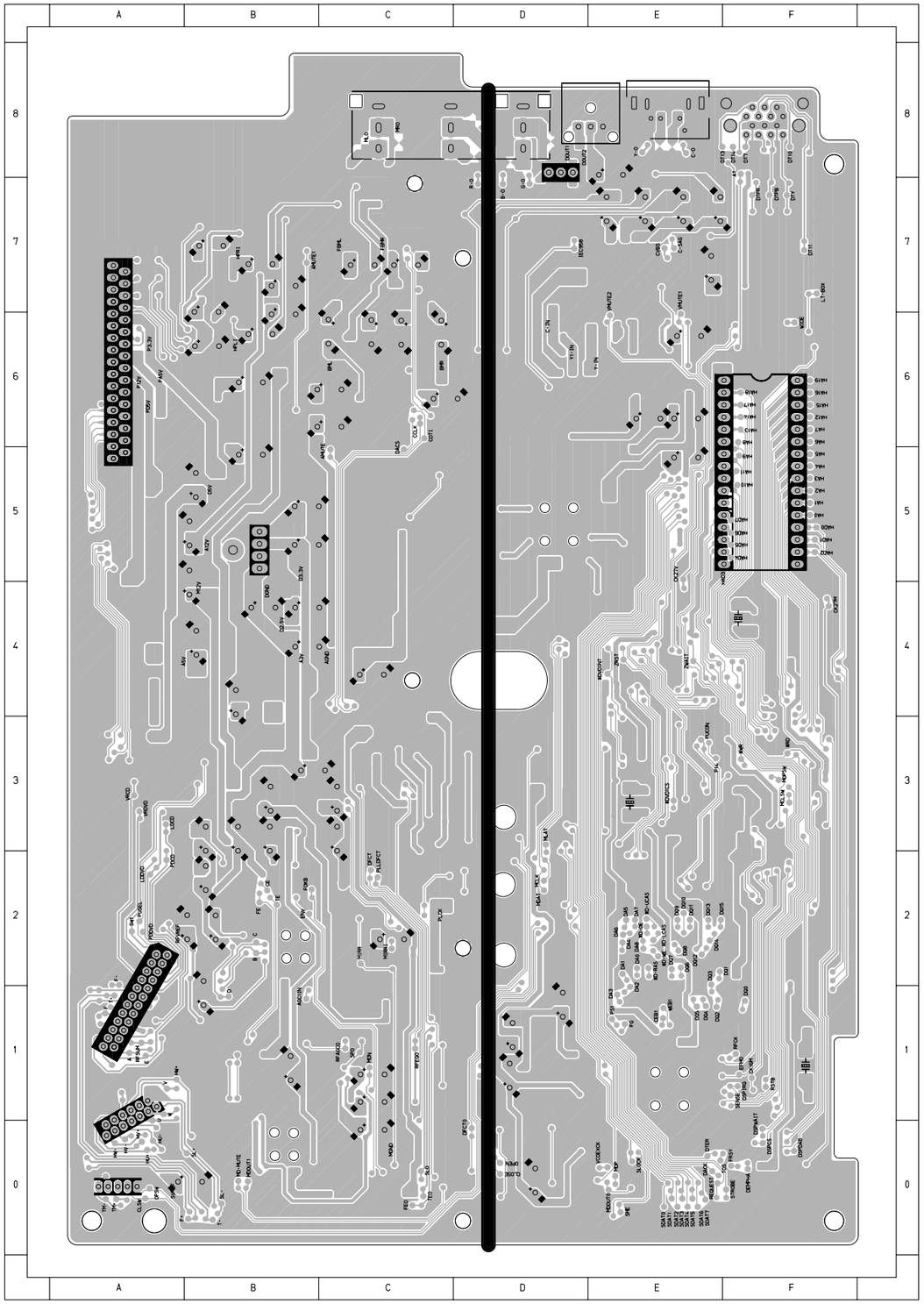


4-2 DVD Main

COMPONENT SIDE

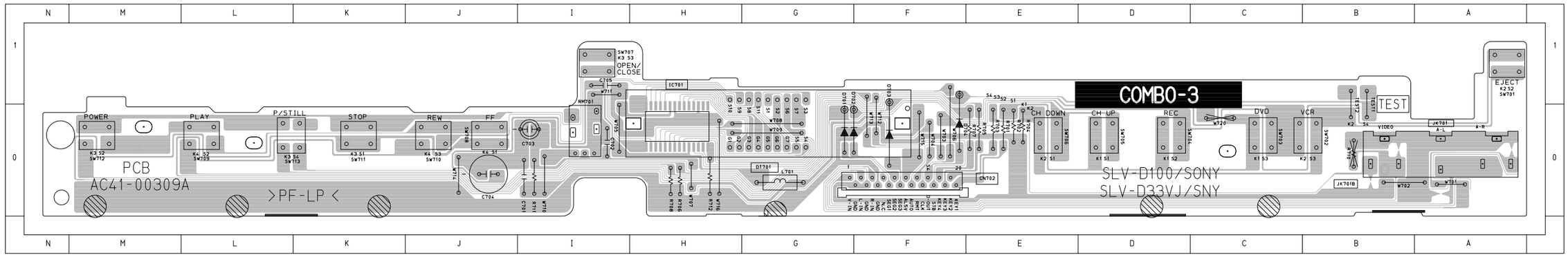


CONDUCTOR SIDE

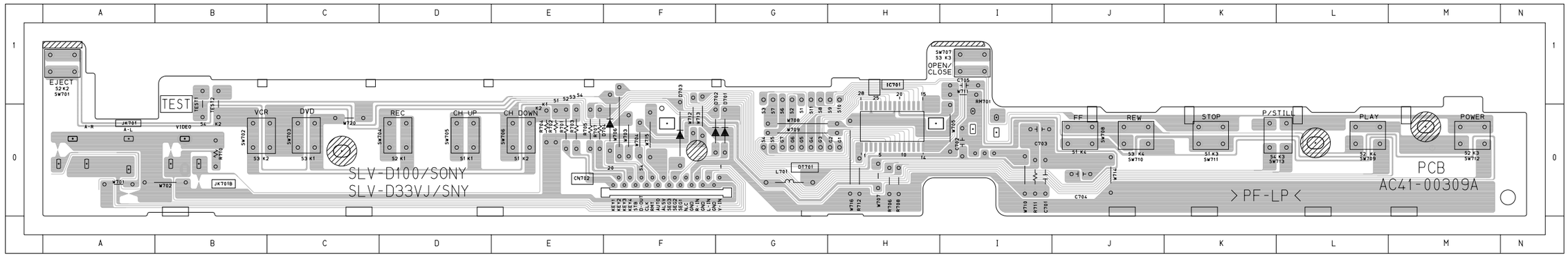


4-3 FUNCTION-Timer

COMPONENT SIDE



CONDUCTOR SIDE



5. SCHEMATIC DIAGRAMS

◆ Block Identification of Main PCB ---------- 5-3

VCR Main PCB

5-1 S.M.P.S. ---------- 5-5

5-2 Power Drive ---------- 5-7

5-3 Function-Time ---------- 5-9

5-4 Logic ---------- 5-11

5-5 A/V ---------- 5-13

5-6 Hi-Fi/MTS ---------- 5-15

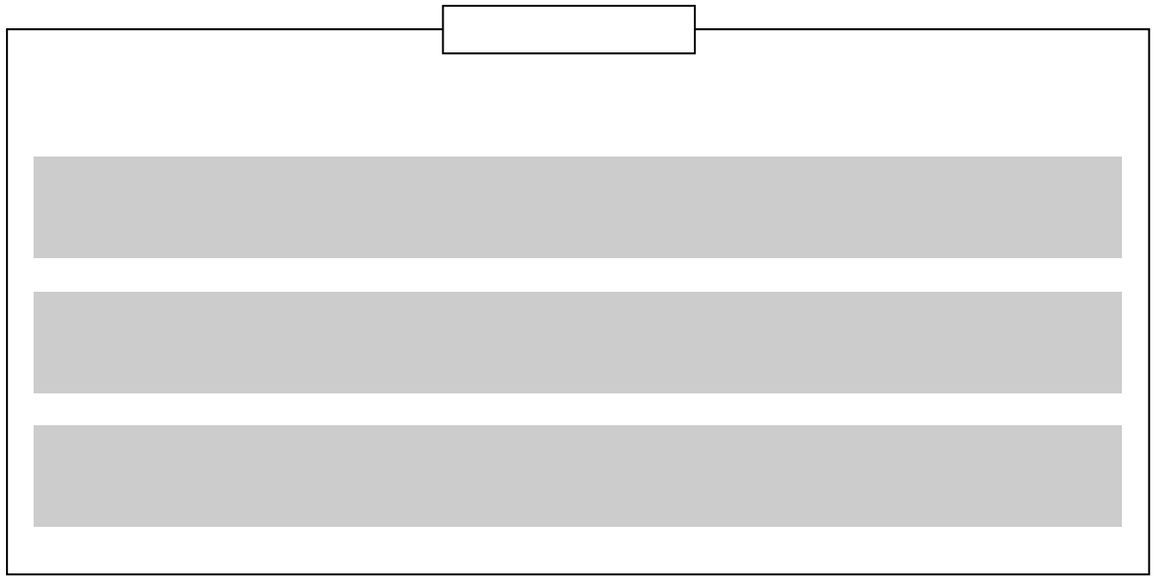
5-7 Input-Output ---------- 5-17

DVD Main PCB

5-8 DVD Main-Micom/AV Decoder ---------- 5-19

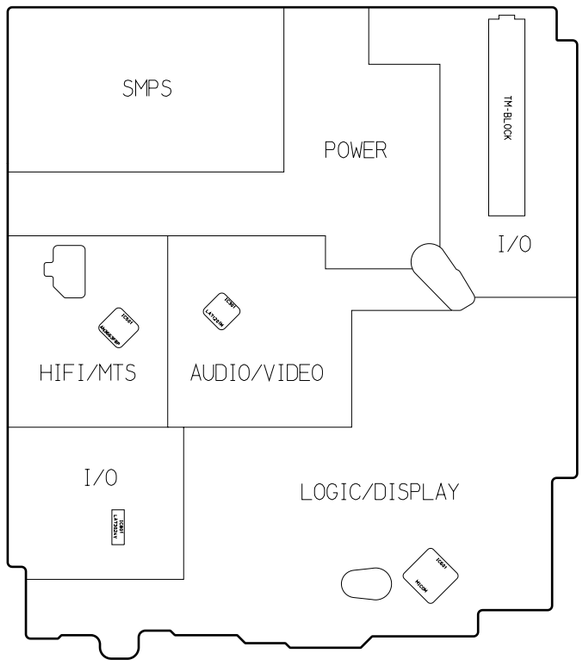
5-9 DVD Servo ---------- 5-21

5-10 DVD Audio/Video ---------- 5-23

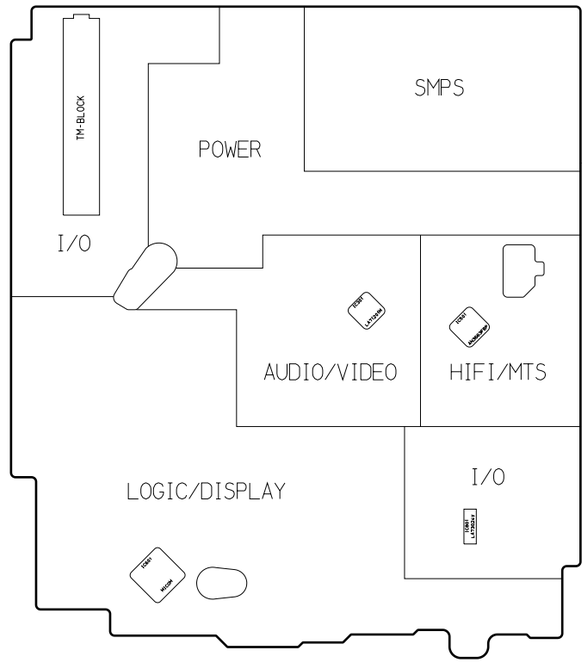


◆ Block Identification of Main PCB

VCR MAIN PCB

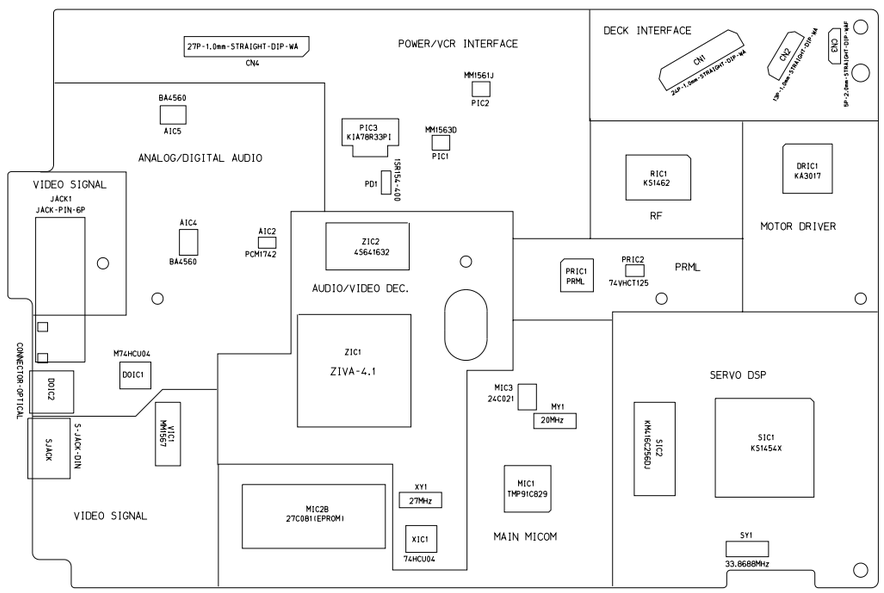


<Component Side>



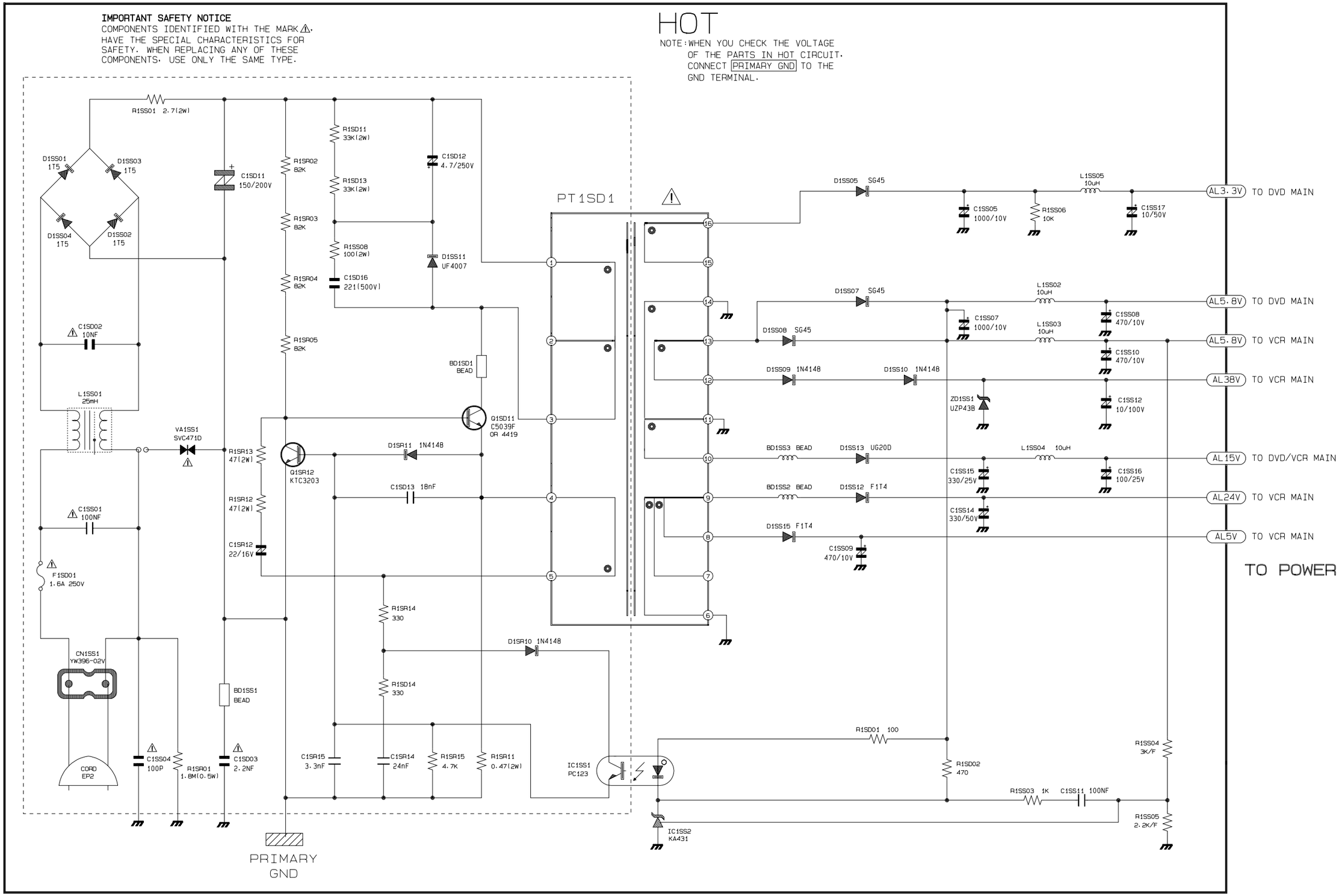
<Conductor Side>

DVD MAIN PCB

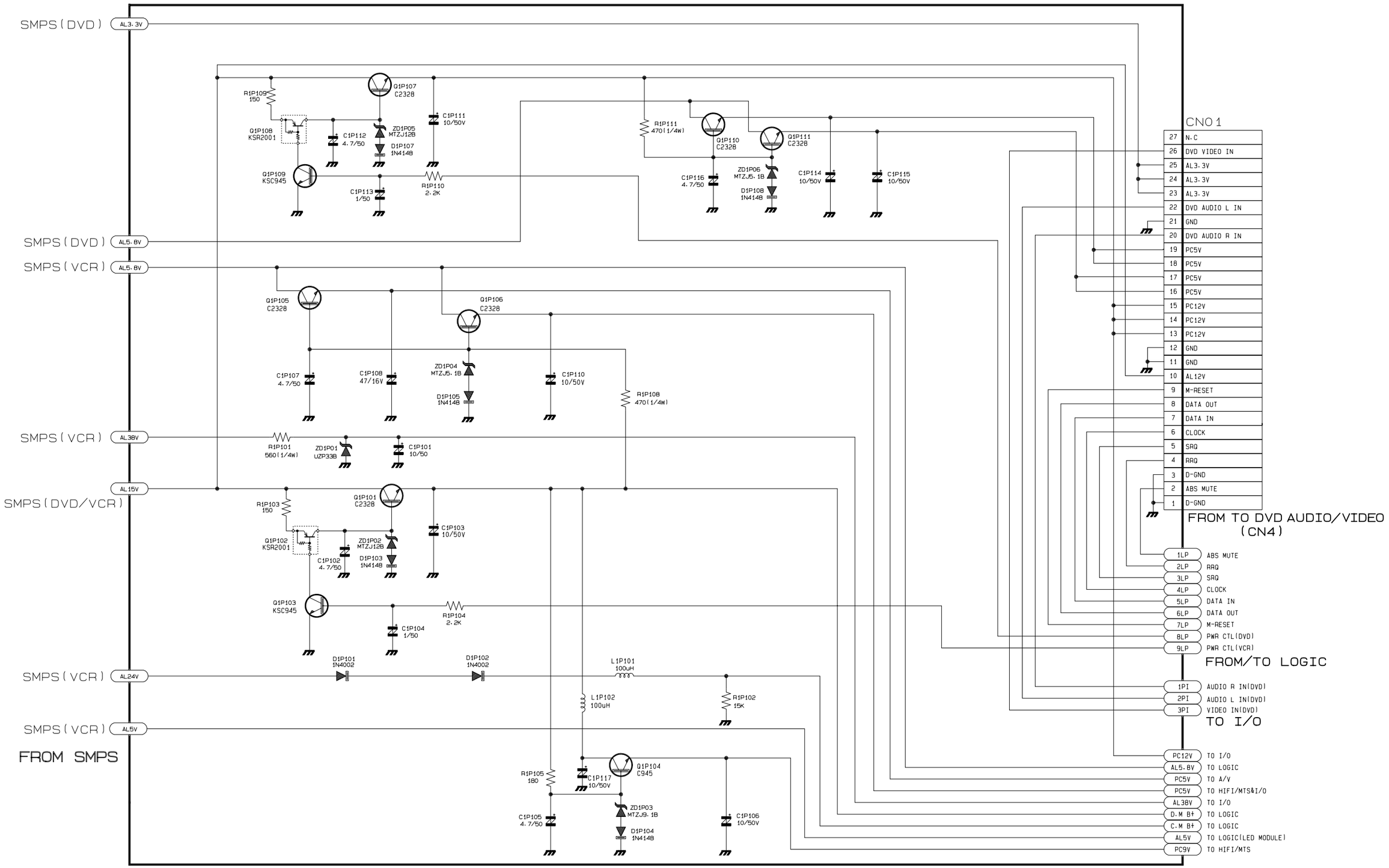


<Component Side>

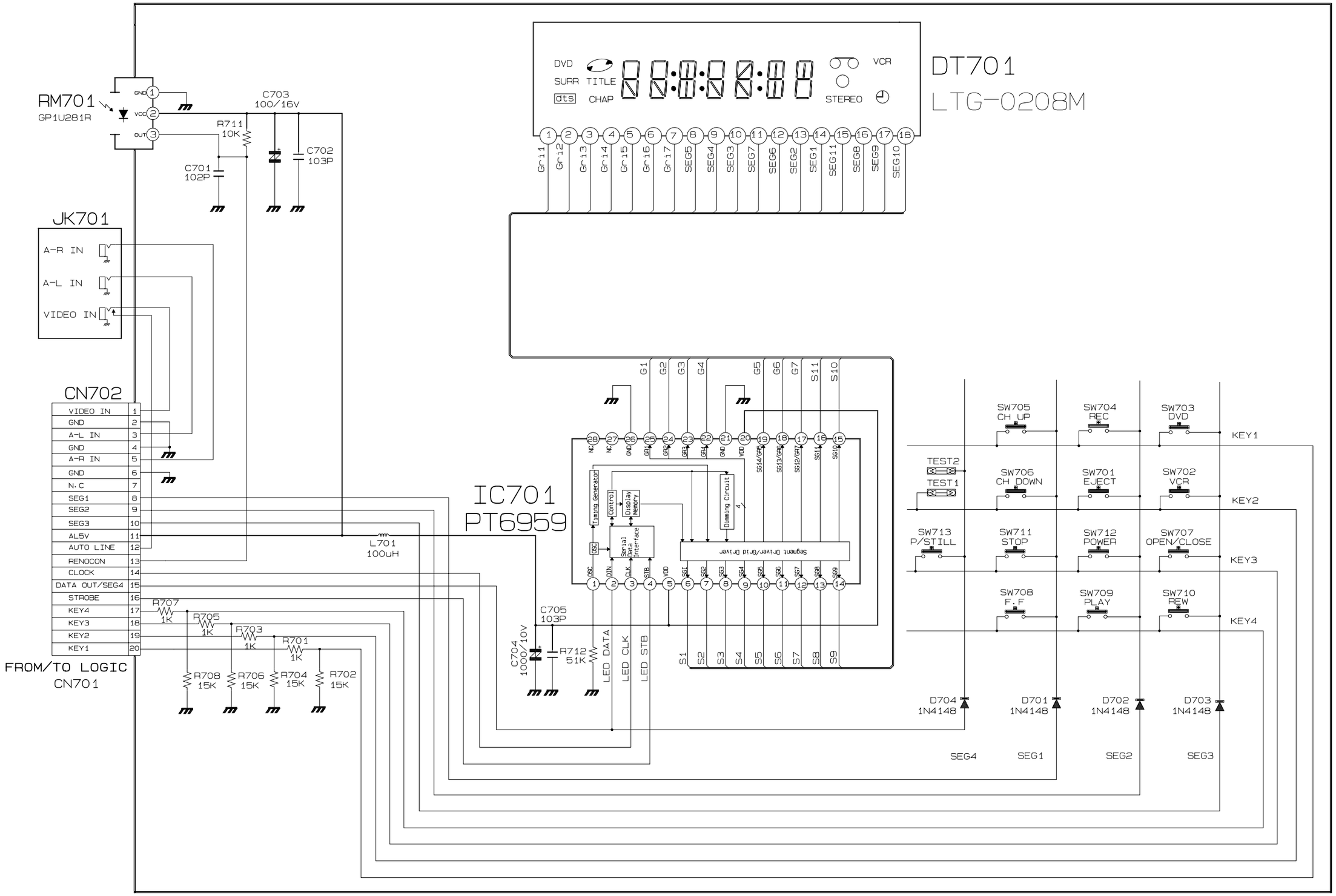
5-1 S.M.P.S.

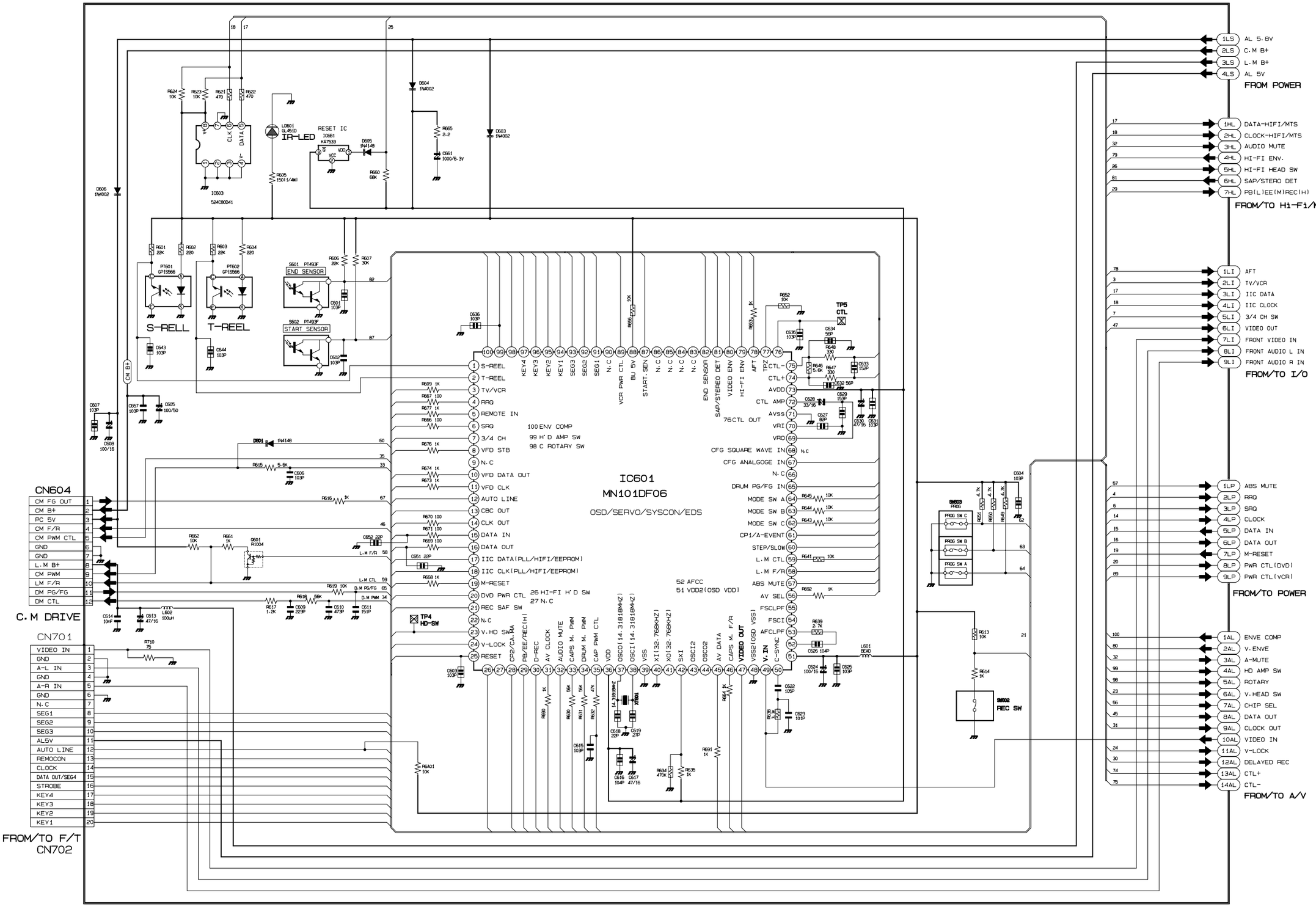

IMPORTANT SAFETY NOTICE
COMPONENTS IDENTIFIED WITH THE MARK ⚠, HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.
HOT
NOTE : WHEN YOU CHECK THE VOLTAGE OF THE PARTS IN HOT CIRCUIT. CONNECT PRIMARY GND TO THE GND TERMINAL.
PT1SD1
R1SS01 2.7(2W)
D1SS01 1T5
D1SS03 1T5
D1SS04 1T5
D1SS02 1T5
C1SD11 150/200V
R1SR02 82K
R1SR03 82K
R1SR04 82K
R1SR05 82K
R1SD11 33K(2W)
R1SD13 33K(2W)
R1SS08 100(2W)
C1SD16 221(500V)
C1SD12 4.7/250V
D1SS11 UF4007
C1SD02 10NF
L1SS01 25mH
VA1SS1 SVC471D
R1SR13 47(2W)
R1SR12 47(2W)
C1SR12 22/16V
Q1SR12 KTC3203
D1SR11 1N4148
C1SD13 18nF
Q1SD11 C5039F OR 4419
BD1SD1 BEAD
C1SS01 100NF
F1SD01 1.6A 250V
CN1SS1 YW396-02V
CORD EP2
C1SS04 100P
R1SR01 1.8M(0.5W)
BD1SS1 BEAD
C1SD03 2.2NF
R1SR14 330
R1SD14 330
D1SR10 1N4148
C1SR15 3.3nF
C1SR14 24nF
R1SR15 4.7K
R1SR11 0.47(2W)
IC1SS1 PC123
IC1SS2 KA431
PRIMARY GND
D1SS05 SG45
C1SS05 1000/10V
R1SS06 10K
L1SS05 10uH
C1SS17 10/50V
AL3.3V TO DVD MAIN
D1SS07 SG45
C1SS07 1000/10V
L1SS02 10uH
C1SS08 470/10V
AL5.8V TO DVD MAIN
D1SS08 SG45
L1SS03 10uH
C1SS10 470/10V
AL5.8V TO VCR MAIN
D1SS09 1N4148
D1SS10 1N4148
ZD1SS1 UZP43B
C1SS12 10/100V
AL38V TO VCR MAIN
BD1SS3 BEAD
D1SS13 UG20D
L1SS04 10uH
C1SS15 330/25V
C1SS16 100/25V
AL15V TO DVD/VCR MAIN
BD1SS2 BEAD
D1SS12 F1T4
C1SS14 330/50V
AL24V TO VCR MAIN
D1SS15 F1T4
C1SS09 470/10V
AL5V TO VCR MAIN
TO POWER
R1SD01 100
R1SD02 470
R1SS03 1K
C1SS11 100NF
R1SS04 3K/F
R1SS05 2.2K/F

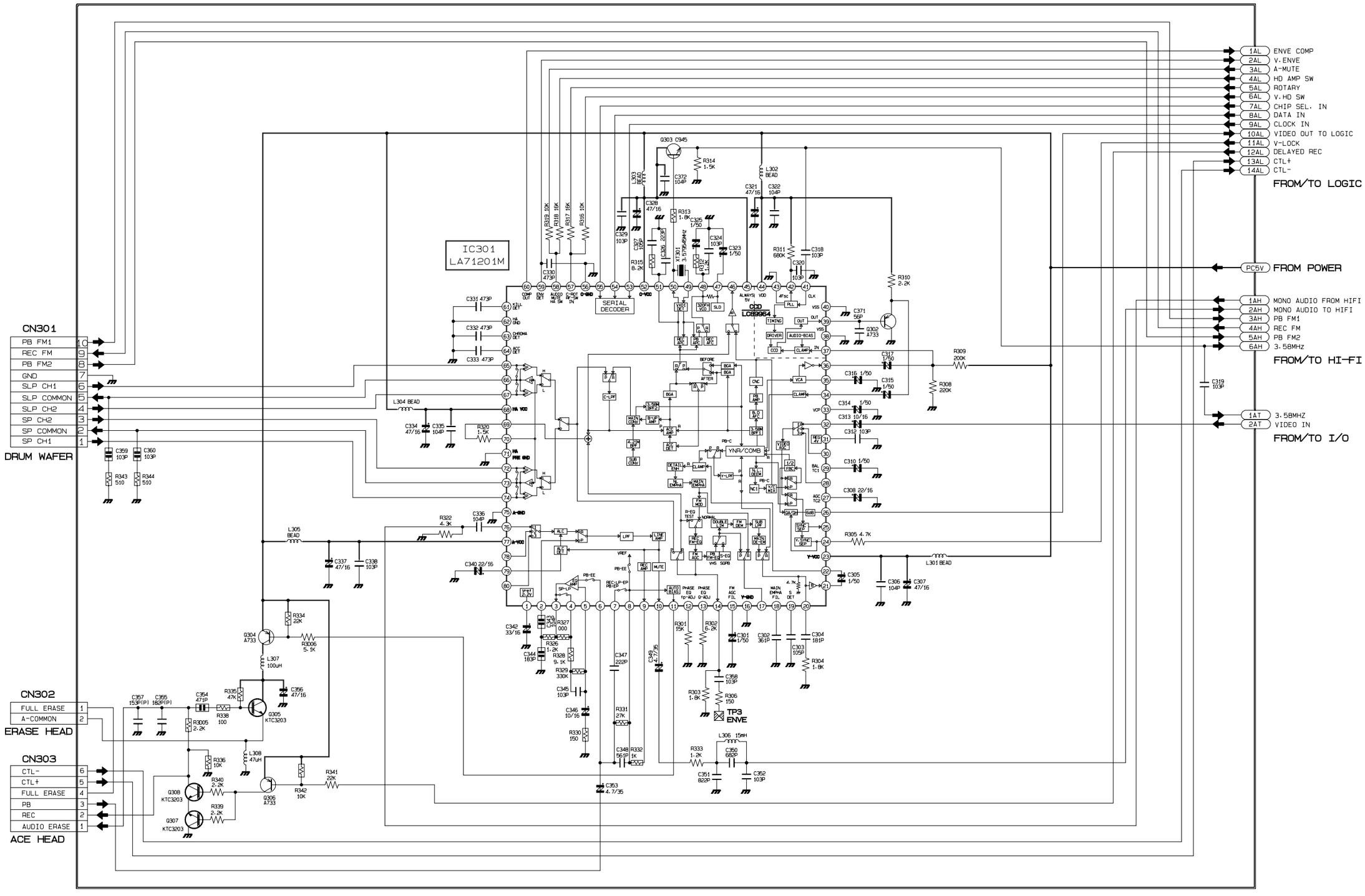
5-2 Power Drive

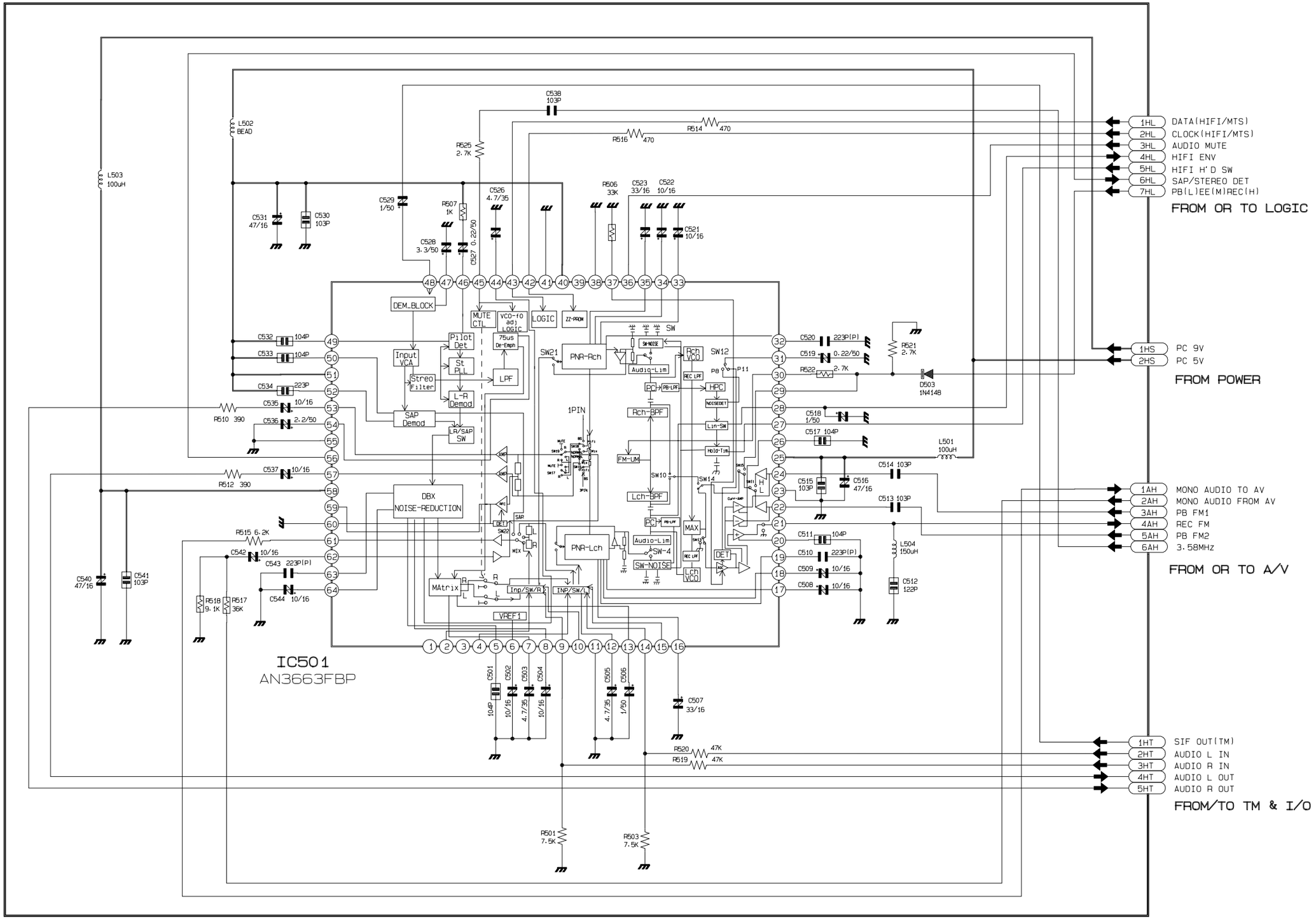


5-3 Function-Timer

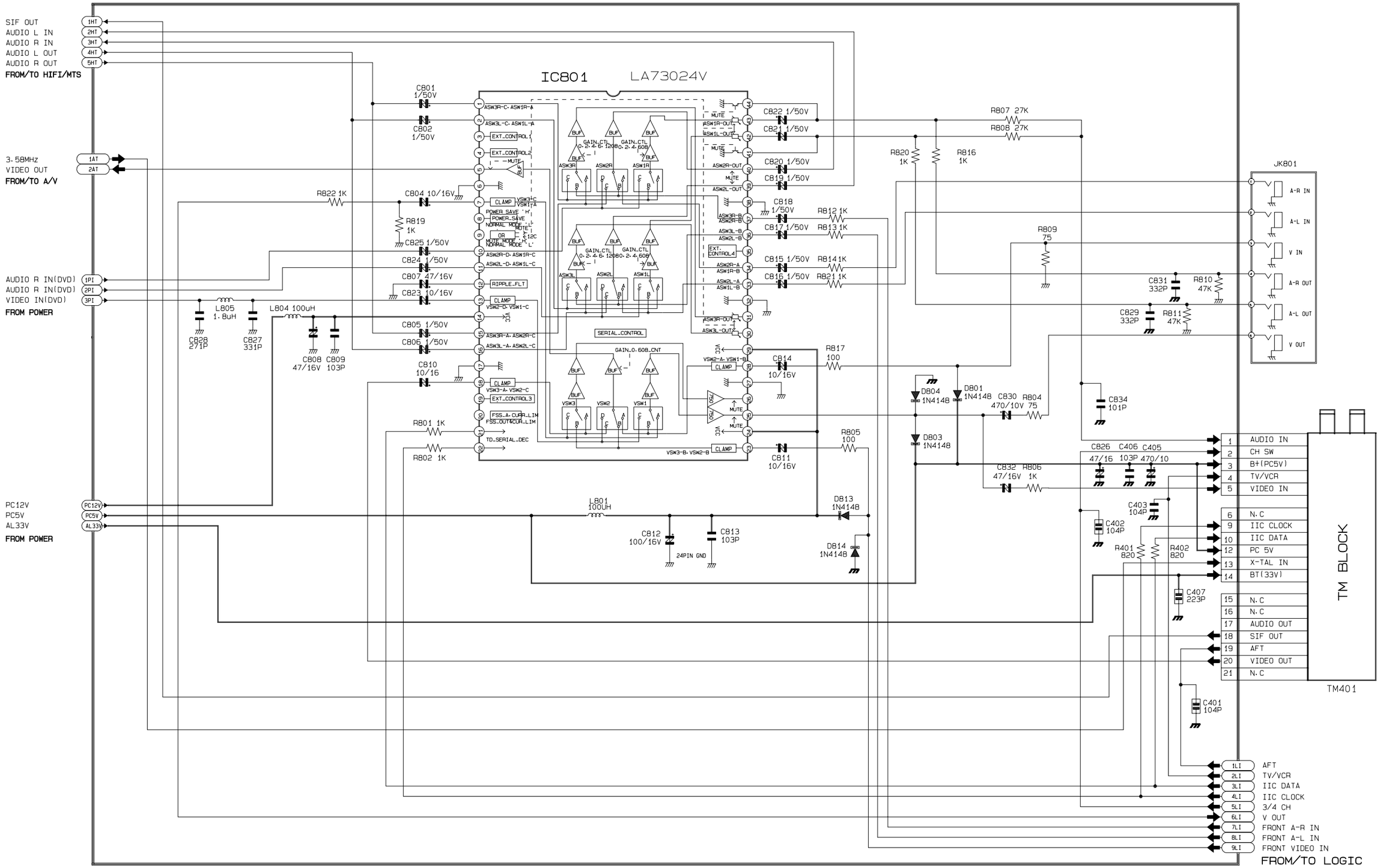


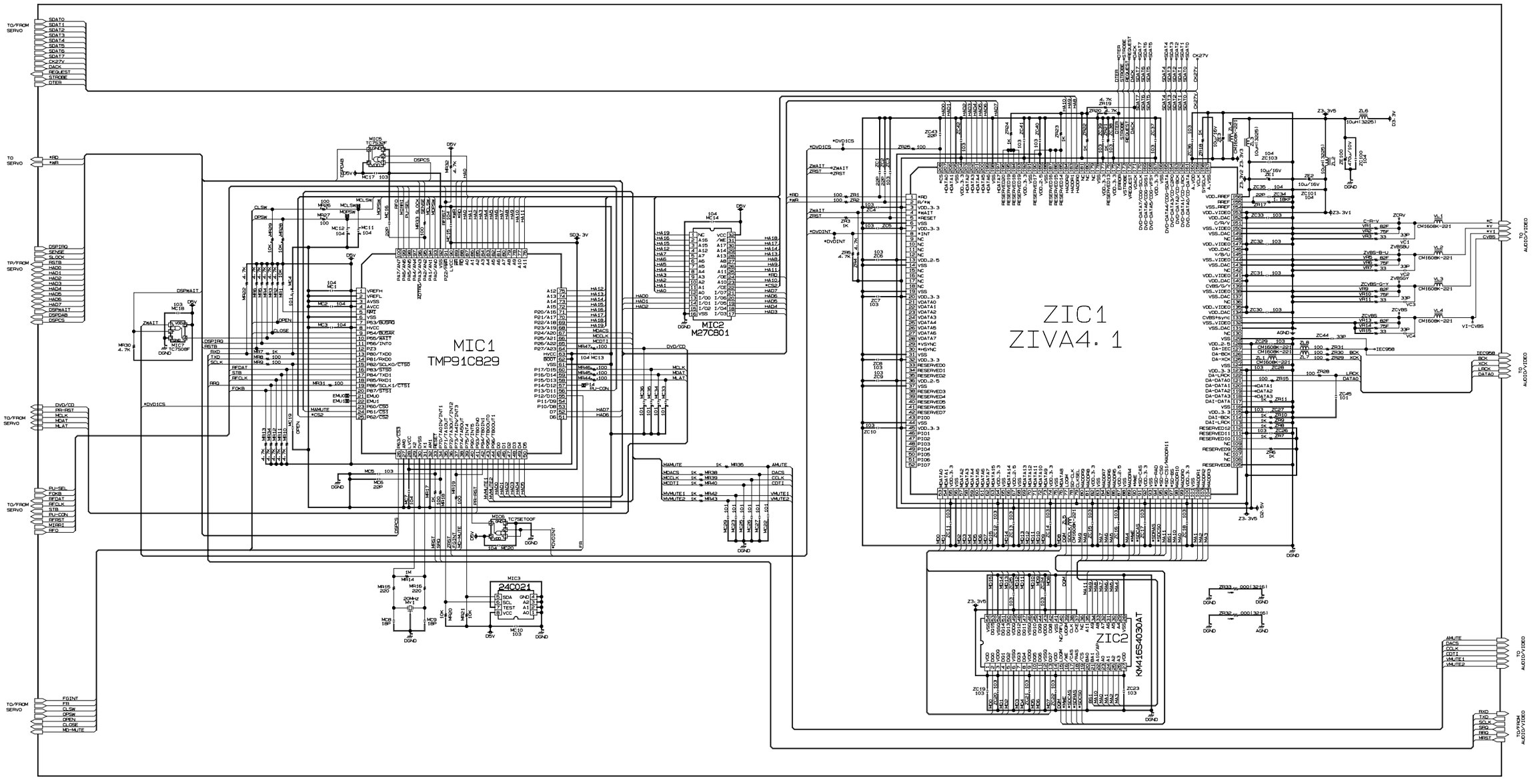

IC601
MN101DF06
OSD/SERVO/SYSCON/EDS
IR-LED
RESET IC
S-REEL
T-REEL
END SENSOR
START SENSOR
TP5 CTL
TP4 HD-SW
CN604
C.M DRIVE
CN701
FROM/TO F/T CN702
FROM POWER
FROM/TO Hi-Fi/MTS
FROM/TO I/O
FROM/TO POWER
FROM/TO A/V
SW603 PROG
SW602 REC SW
100 ENV COMP
99 H'D AMP SW
98 C ROTARY SW
76 CTL OUT
52 AFCC
51 VDD2(OSD VDD)
26 HI-FI H'D SW
27 N.C


IC301
LA71201M
SERIAL DECODER
CCD
LC89964
YNR/COMB
CN301
PB FM1
REC FM
PB FM2
GND
SLP CH1
SLP COMMON
SLP CH2
SP CH2
SP COMMON
SP CH1
DRUM WAFER
CN302
FULL ERASE
A-COMMON
ERASE HEAD
CN303
CTL-
CTL+
FULL ERASE
PB
REC
AUDIO ERASE
ACE HEAD
1AL ENVE COMP
2AL V.ENVE
3AL A-MUTE
4AL HD AMP SW
5AL ROTARY
6AL V.HD SW
7AL CHIP SEL. IN
8AL DATA IN
9AL CLOCK IN
10AL VIDEO OUT TO LOGIC
11AL V-LOCK
12AL DELAYED REC
13AL CTL+
14AL CTL-
FROM/TO LOGIC
PC5V FROM POWER
1AH MONO AUDIO FROM HIFI
2AH MONO AUDIO TO HIFI
3AH PB FM1
4AH REC FM
5AH PB FM2
6AH 3.58MHZ
FROM/TO HI-FI
1AT 3.58MHZ
2AT VIDEO IN
FROM/TO I/O
TP3
ENVE

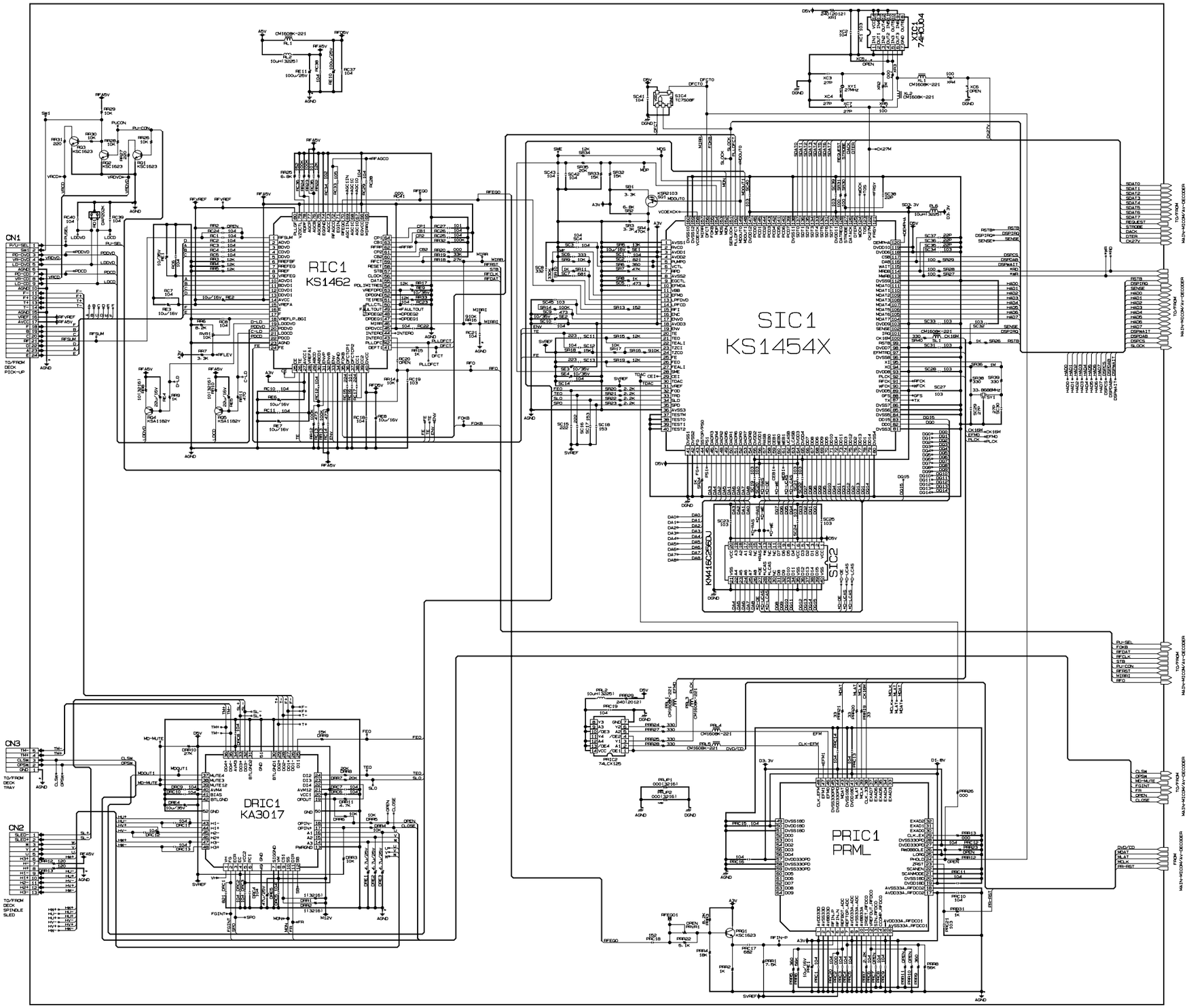

1HL DATA(HIFI/MTS)
2HL CLOCK(HIFI/MTS)
3HL AUDIO MUTE
4HL HIFI ENV
5HL HIFI H'D SW
6HL SAP/STEREO DET
7HL PB(L)EE(M)REC(H)
FROM OR TO LOGIC
1HS PC 9V
2HS PC 5V
FROM POWER
1AH MONO AUDIO TO AV
2AH MONO AUDIO FROM AV
3AH PB FM1
4AH REC FM
5AH PB FM2
6AH 3.58MHz
FROM OR TO A/V
1HT SIF OUT(TM)
2HT AUDIO L IN
3HT AUDIO R IN
4HT AUDIO L OUT
5HT AUDIO R OUT
FROM/TO TM & I/O
IC501
AN3663FBP
DEM_BLOCK
MUTE CTL
VCO-fo adj LOGIC
LOGIC
ZZ-PROM
Pilot Det
75us De-Emph
Input VCA
Stereo Filter
St PLL
LPF
L-R Demod
SAP Demod
LR/SAP SW
DBX NOISE-REDUCTION
MAtrix
Inp/SW/R
INP/SW/L
VREF1
PNR-Rch
PNR-Lch
SW21
SW12
SW10
SW14
SW22
SW-4
SW-NOISE
SW
SW-NOISE
Rch VCO
Lch VCO
Audio-Lim
REC LPF
PB-LPF
HPC
NOISEDET
Lin-SW
Holo-Lim
Rch-BPF
Lch-BPF
FM-UM
MAX
DET
SAP
MIX
1PIN
L502 BEAD
L503 100uH
L501 100uH
L504 150uH
C538 103P
R525 2.7K
R514 470
R516 470
C529 1/50
C531 47/16
C530 103P
R507 1K
C528 3.3/50
C527 0.22/50
C526 4.7/35
R506 33K
C523 33/16
C522 10/16
C521 10/16
C532 104P
C533 104P
C534 223P
C535 10/16
C536 2.2/50
R510 390
C537 10/16
R512 390
R515 6.2K
C542 10/16
C543 223P(P)
C544 10/16
C540 47/16
C541 103P
R518 9.1K
R517 36K
C520 223P(P)
C519 0.22/50
R522 2.7K
R521 2.7K
D503 1N4148
C518 1/50
C517 104P
C514 103P
C515 103P
C516 47/16
C513 103P
C511 104P
C510 223P(P)
C509 10/16
C508 10/16
C512 122P
C501 104P
C502 10/16
C503 4.7/35
C504 10/16
C505 4.7/35
C506 1/50
C507 33/16
R520 47K
R519 47K
R501 7.5K
R503 7.5K

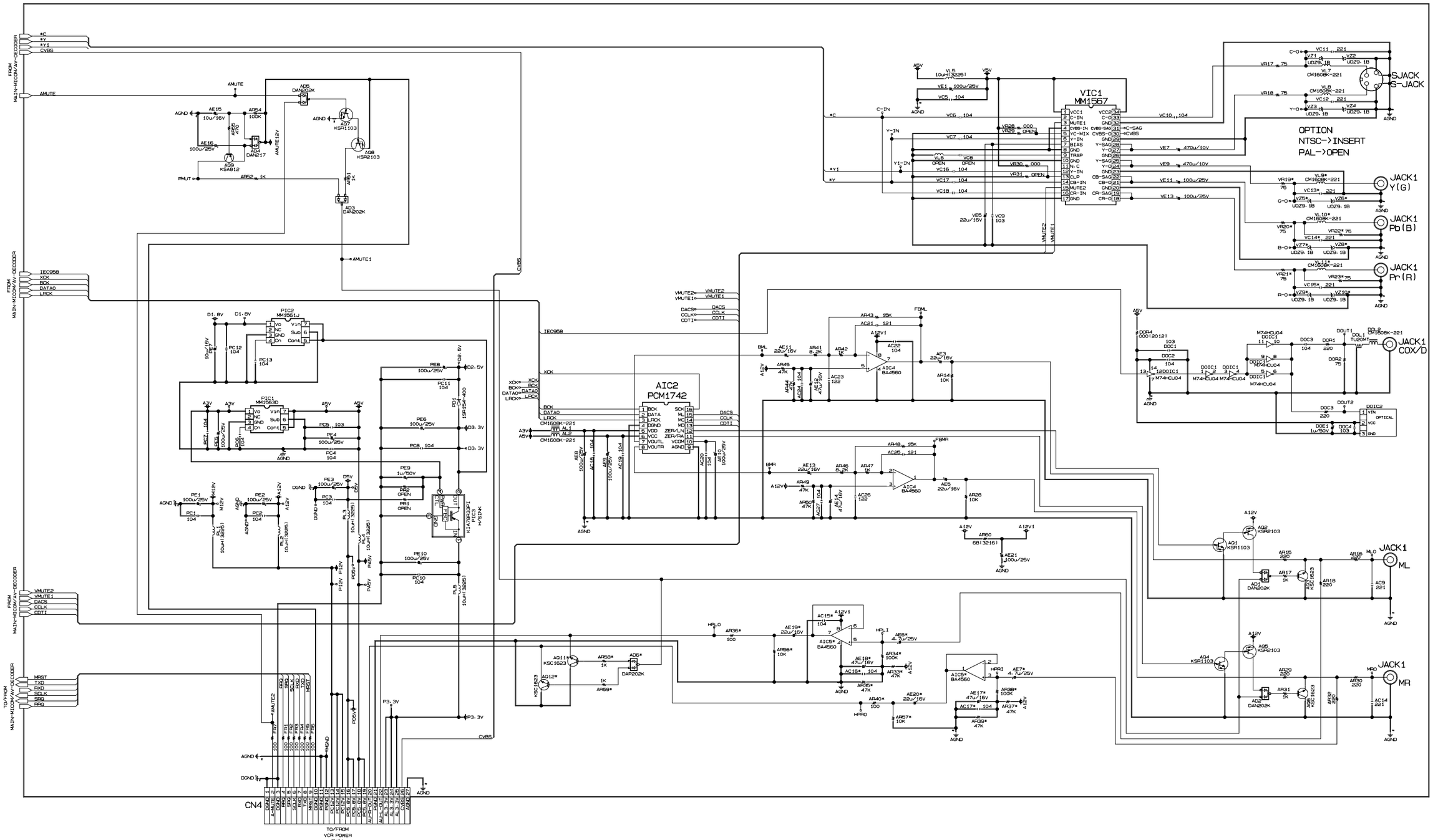
5-7 Input-Output




MIC1
TMP91C829
MIC2
M27C801
ZIC1
ZIVA4.1
ZIC2
KM416S4030AT
MIC3
24C021
MIC5
TC7SET00F
MIC6
TC7SET00F
MIC7
TC7S08F
MIC8
TC7SET00F
TO/FROM SERVO
TO/FROM AUDIO/VIDEO
DSPCS
DSPWAIT
DSPIRQ
SDA3.3V
DVD/CD
PR-RST
MCLK
MDAT
MLAT
FGINT
FR
CL-SW
OPSW
OPEN
CLOSE
MD-MUTE
AMUTE
DACS
CCLK
CDT1
VMUTE1
VMUTE2
RXD
TXD
SCLK
SRQ
RFQ
MRST

5-9 DVD Servo


RIC1
KS1462
SIC1
KS1454X
SIC2
KM416S2560J
DRIC1
KA3017
PRIC1
PRML
XTC1
74HC04
CN1
CN2
CN3
TO/FROM DECK PICK-UP
TO/FROM DECK SPINDLE SLED
TO/FROM TRAY
TO/FROM MAIN-MICOM A/V-DECODER


VIC1
MM1567
AIC2
PCM1742
OPTION
NTSC->INSERT
PAL->OPEN
JACK1
S-JACK
JACK1
Y(G)
JACK1
Pb(B)
JACK1
Pr(R)
JACK1
COX/D
JACK1
ML
JACK1
MR
CN4
TO/FROM
VCR POWER
CN01

6. VCR Alignment and Adjustments

6-1 Reference

1) X-Point (Tracking center) adjustment, “Head switching adjustment” can be adjusted with remote control.

2) When replacing the VCR Main PCB Micom (IC601) and NVRAM (IC605 ; EEPROM) be sure to adjust the “Head switching adjustment”.

3) When replacing the cylinder ass'y, be sure to adjust the “X-Point” and “Head switching adjustment”.

4) How to adjustment.

- Monmently short-circuit the test point on Function-Timer PCB with pincers to set the adjustment mode.
- If the corresponding adjustment button is pressed, the adjustment is performed automatically.

6-1-1 Location of Adjustment Button of Remote Control

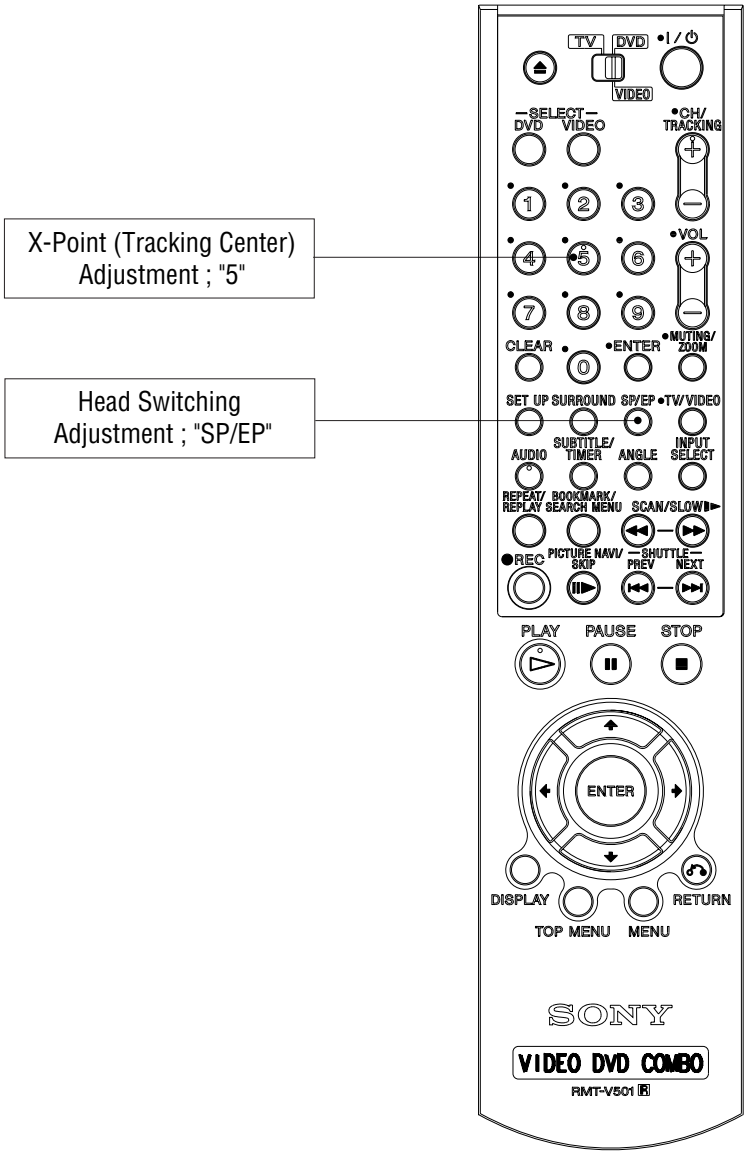


Fig. 6-1

6-1-2 TEST Location for Adjustment Mode Setting

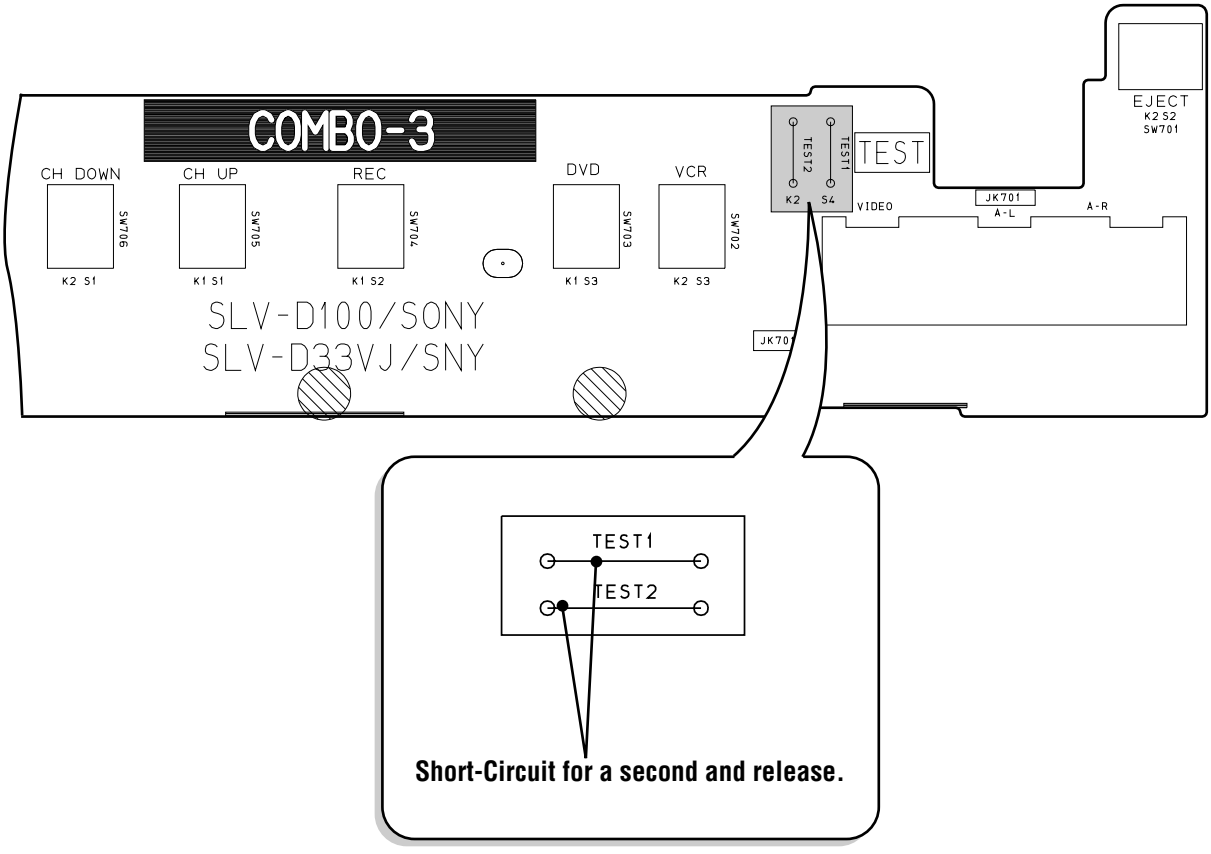


Fig. 6-2 Function-Timer PCB (Top View)

6-2 Mechanical Adjustment

Note : Refer to the Mechanical Manual “TS-10 (P/N: 9-921-790-11) for the adjustment and confirmation of ass’y full deck.

6-2-1 The Number and Position of Test Point

Test point :	TP2 (Audio Output)
	TP3 (Envelope)
	TP4 (H'D S/W-Trigger)
	TP5 (Control Pulse)

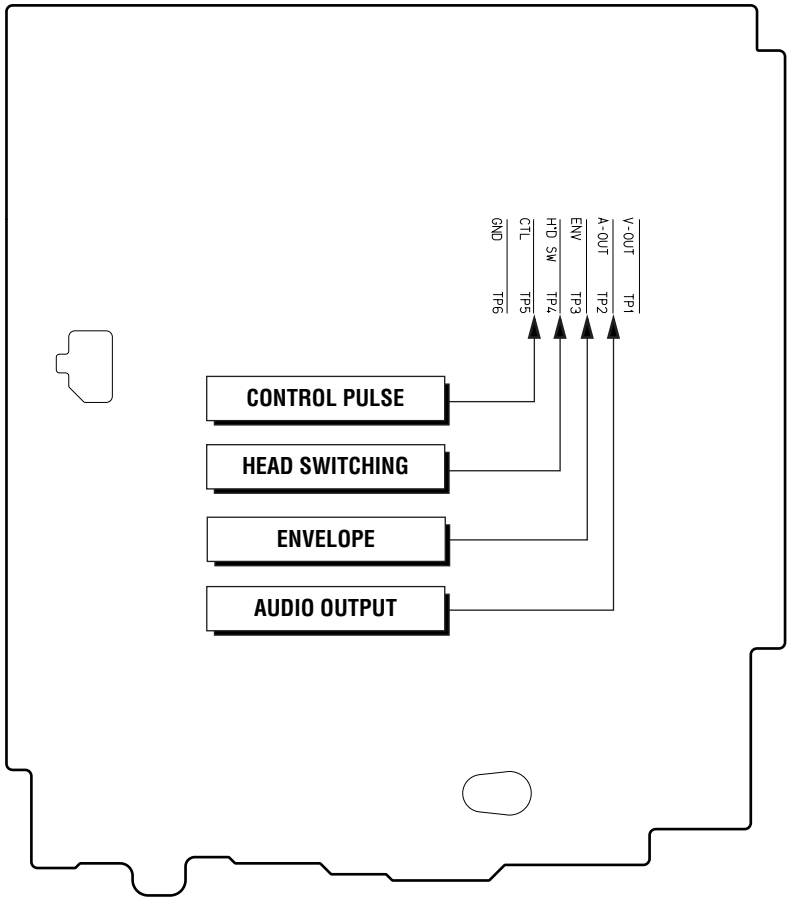


Fig. 6-3 Location of Test point (VCR Main PCB-Top View)

6-2-2 ACE Head Position (X-Point) Adjustment

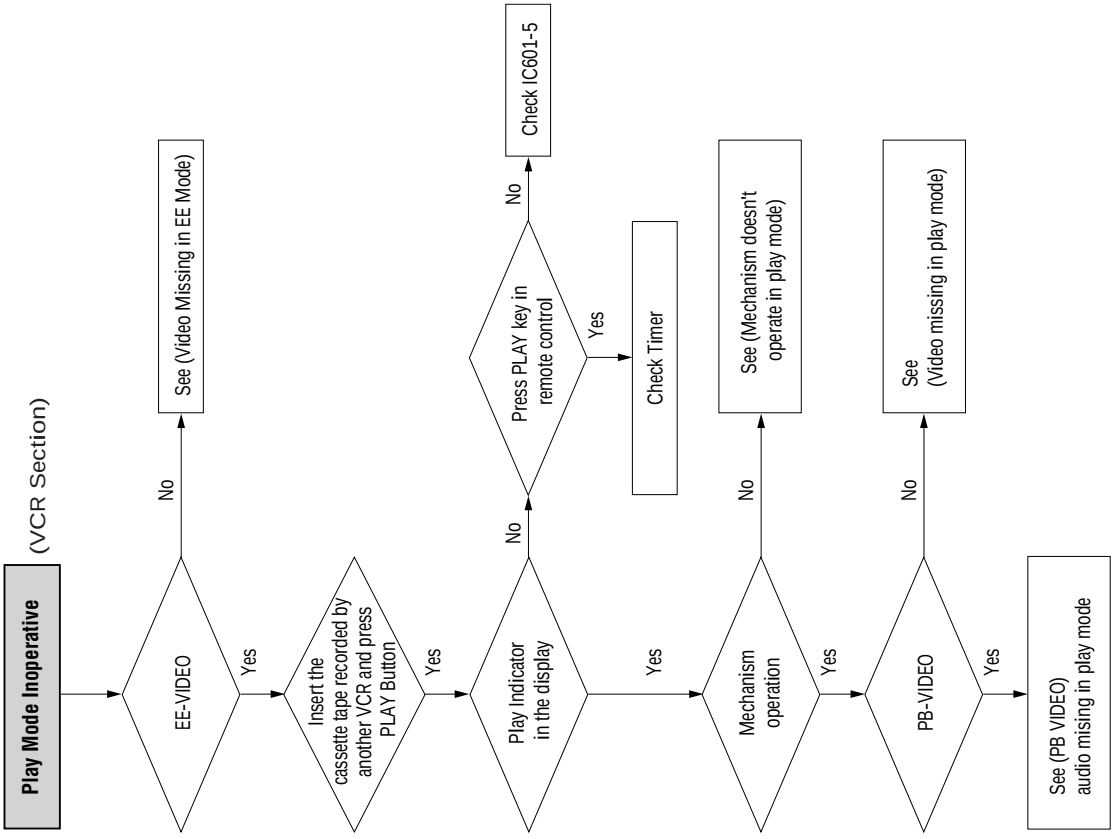
(See the 2-2-1(d) ACE Head Position (X-Point) Adjustment on 2-2 of the Mechanical Manual)

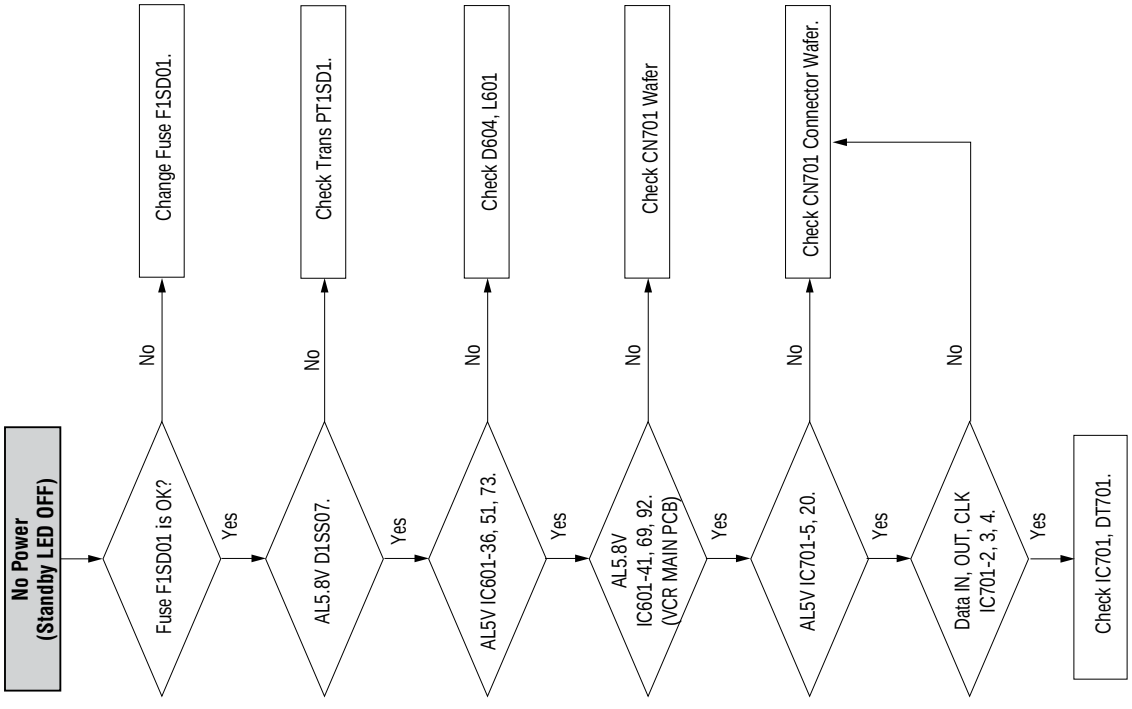
1) Playback the alignment tape (Color bar).
2) Momently short-cricuit the test point on F/Timer PCB with pincers to set the adjustment mode. (See Fig. 6-2)
3) Press the “5” button of remote control then adjustment is operated automatically. (See Fig. 6-1)
4) Connect the CH-1 probe to TP3 (Envelope) the CH-2 probe to TP4 (H’D switching pulse) and then trigger to CH-1.
5) Insert the (-) driver into the X-Point adjustment hole and adjust it so that envelope waveform is maximum.
6) Turn the Power off.

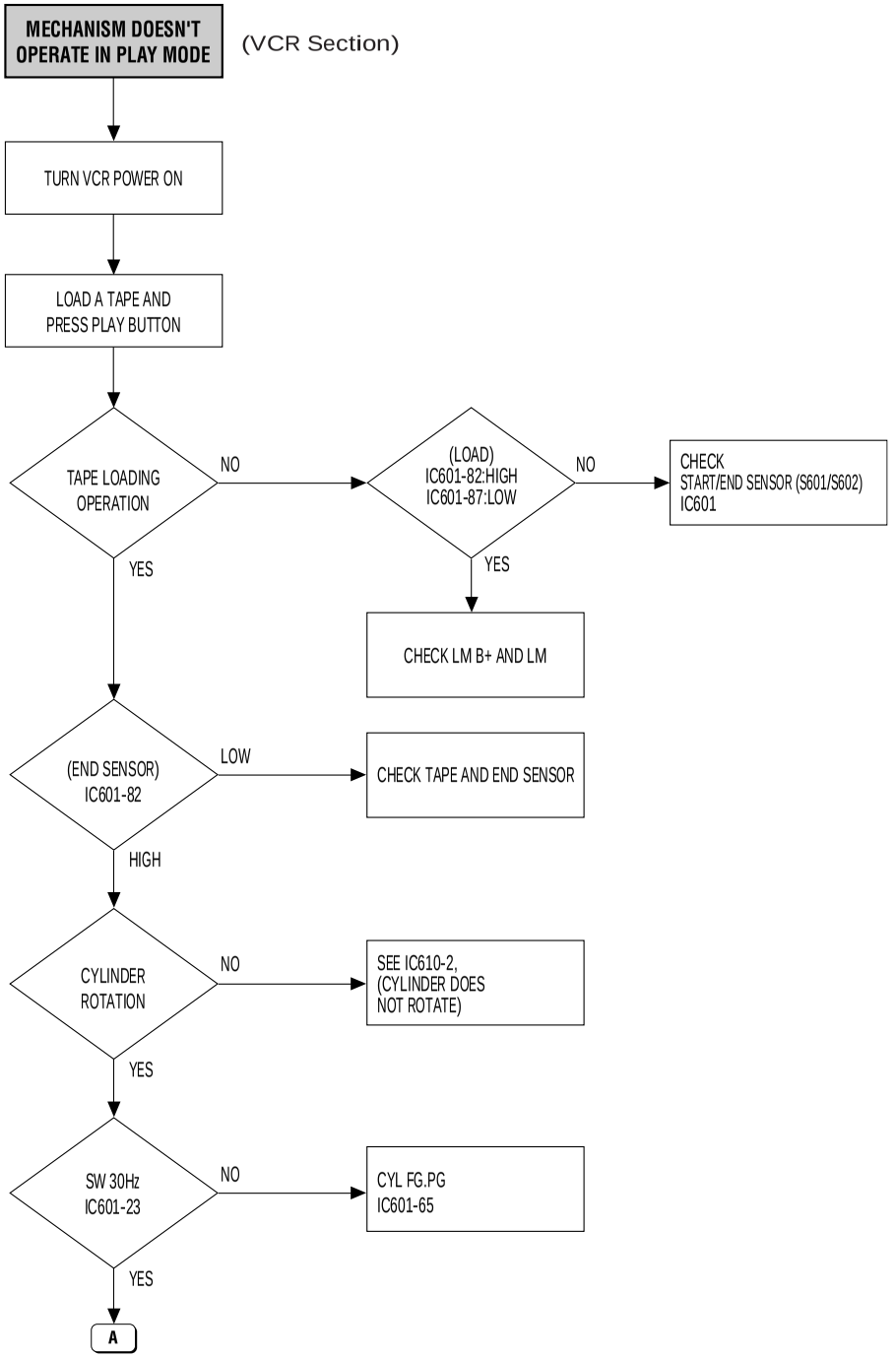
6-3 Head Switching Point Adjustment

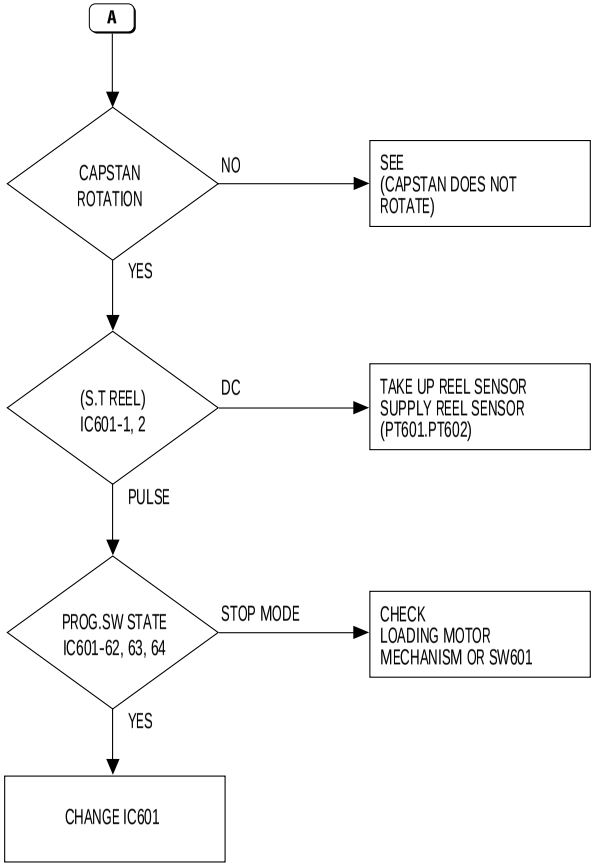
1) Playback the alignment tape.
2) Momently short-circuit the test point on Function-Timer PCB with pincers to set the adjustment mode. (See Fig. 6-2)
3) Press the “SP/EP” button of remote control then adjustment is operated automatically. (See Fig. 6-1)

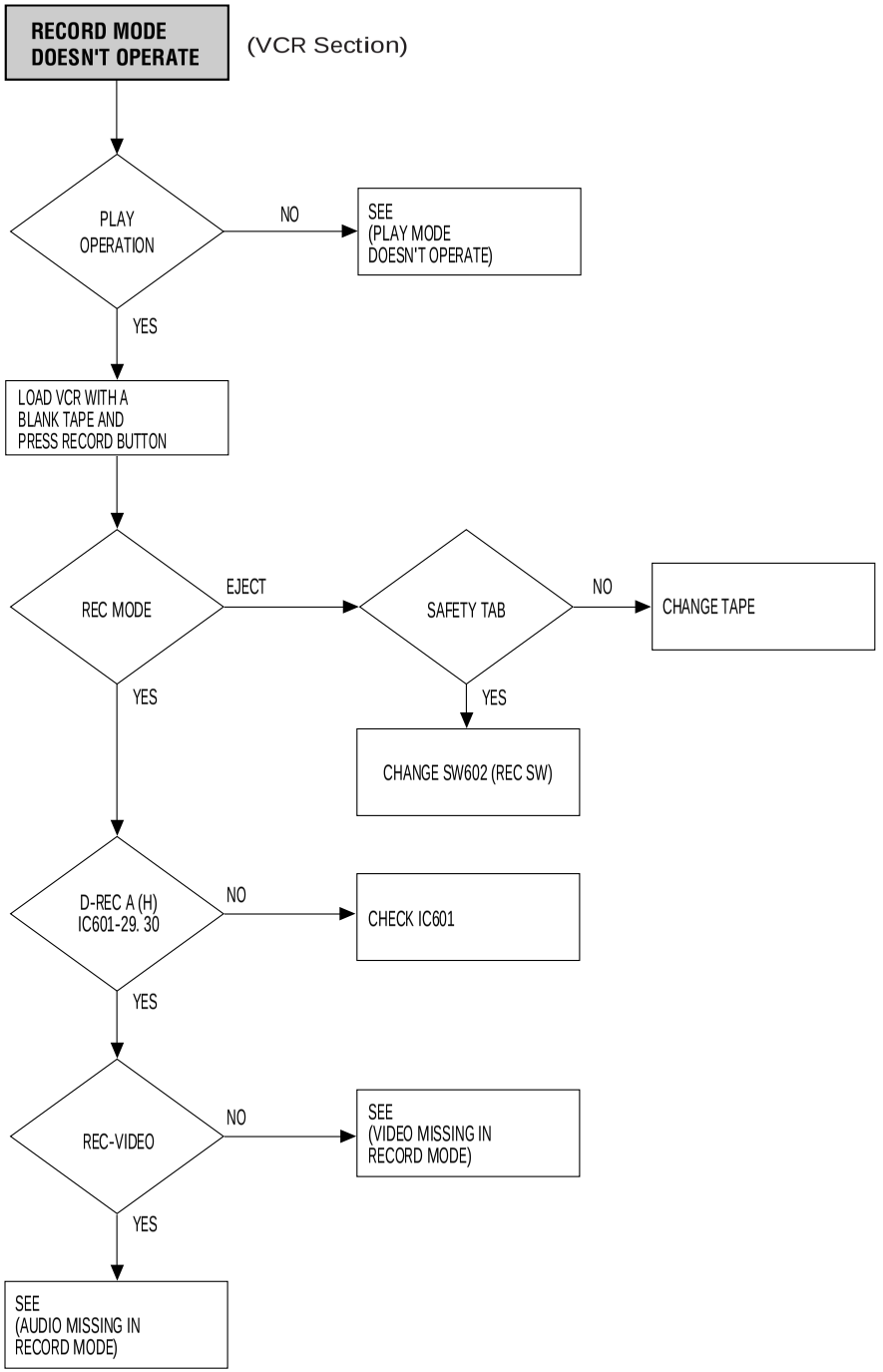
7. Troubleshooting

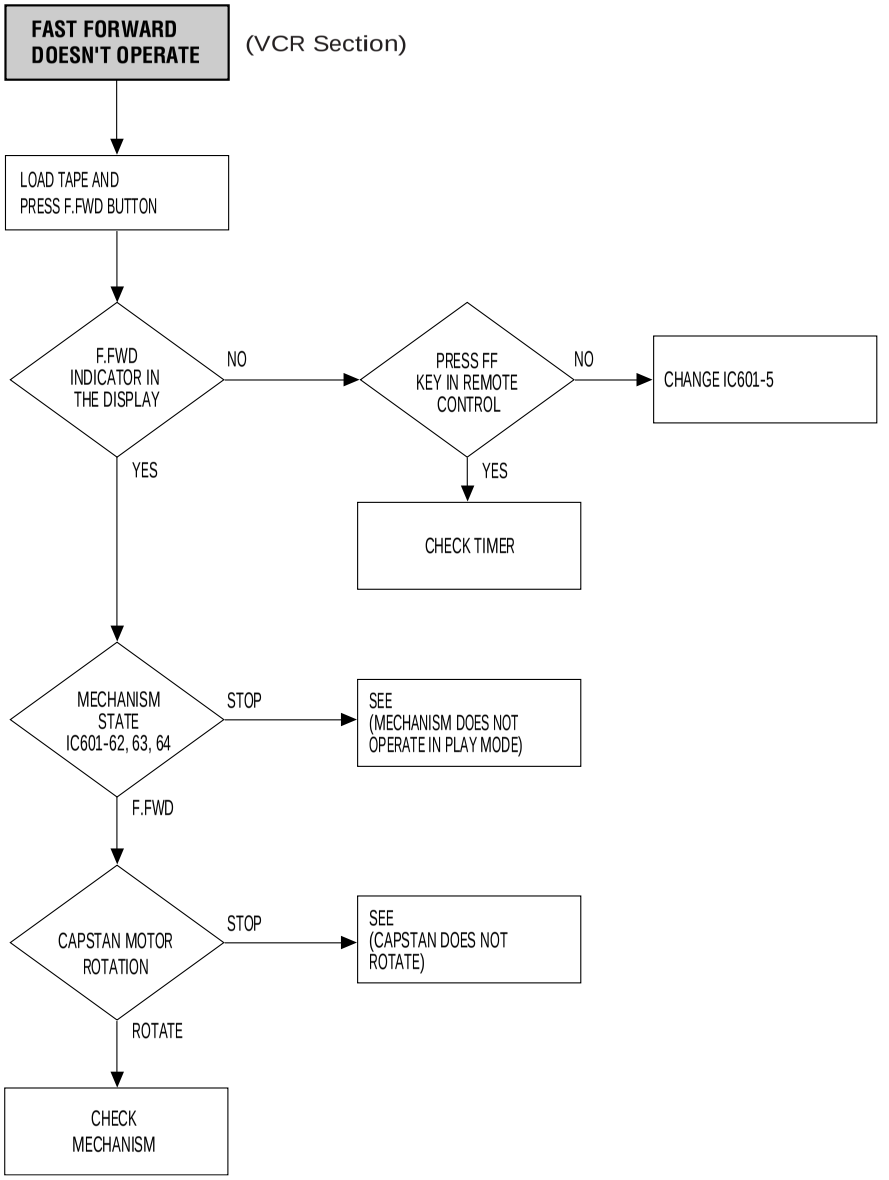


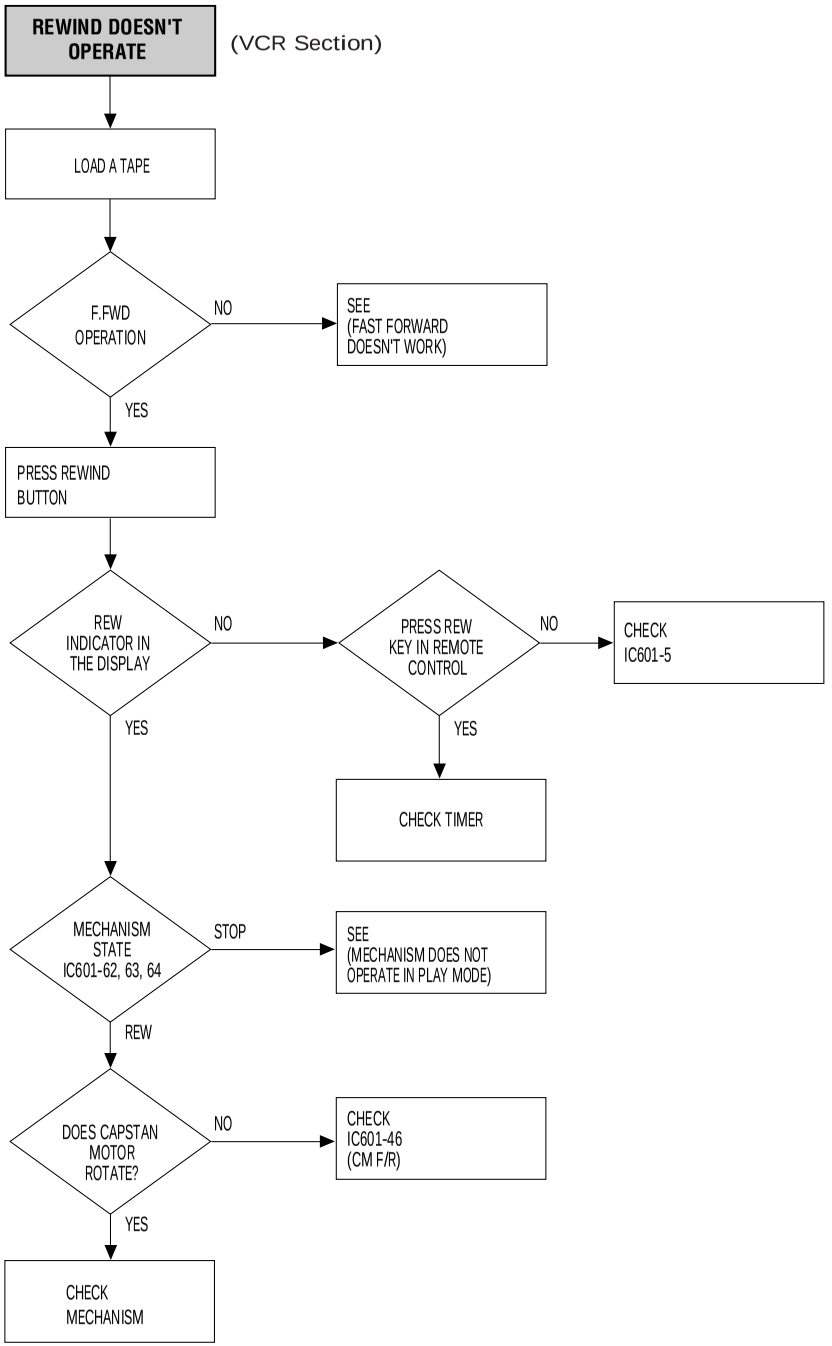


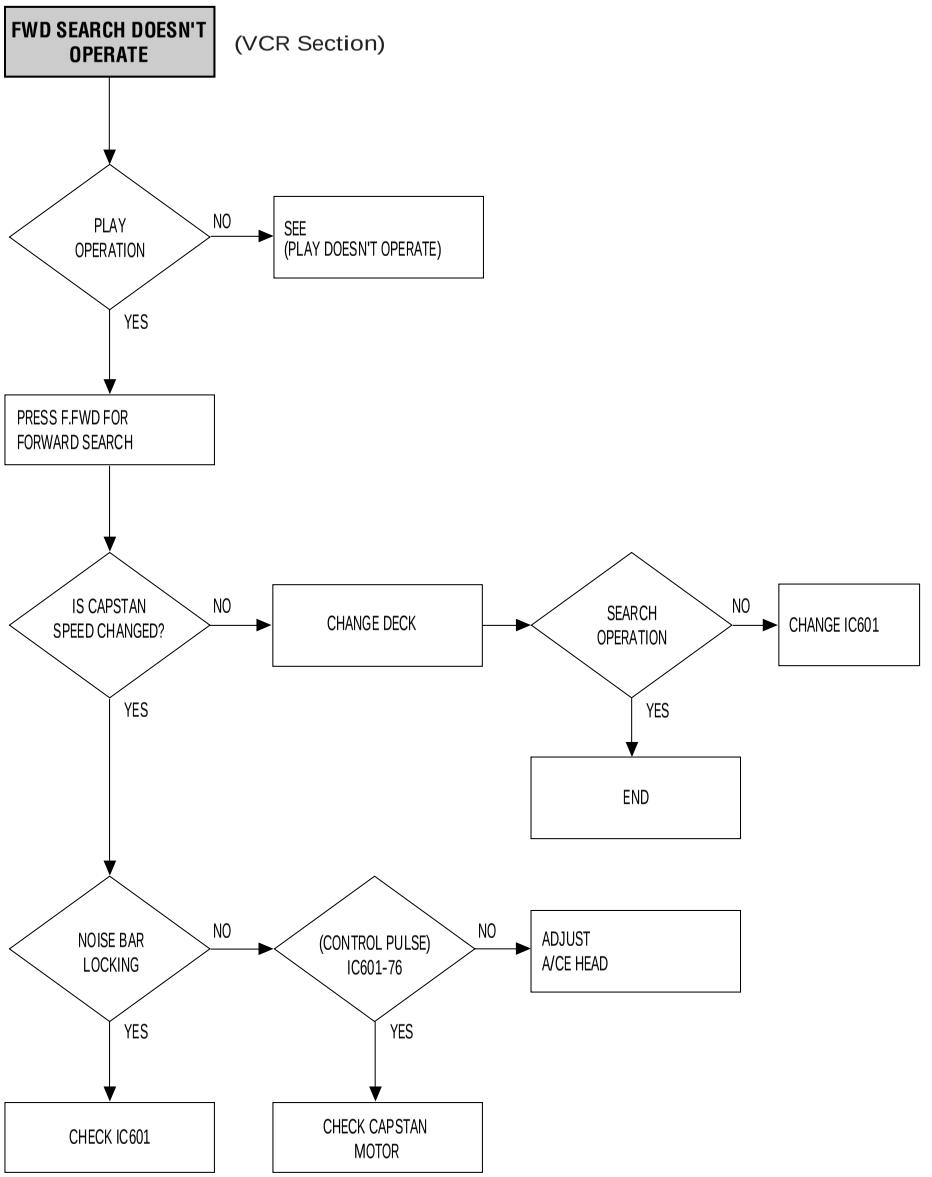

MECHANISM DOESN'T OPERATE IN PLAY MODE
(VCR Section)
TURN VCR POWER ON
LOAD A TAPE AND PRESS PLAY BUTTON
TAPE LOADING OPERATION
NO
YES
(LOAD) IC601-82:HIGH IC601-87:LOW
NO
YES
CHECK START/END SENSOR (S601/S602) IC601
CHECK LM B+ AND LM
(END SENSOR) IC601-82
LOW
CHECK TAPE AND END SENSOR
HIGH
CYLINDER ROTATION
NO
YES
SEE IC610-2, (CYLINDER DOES NOT ROTATE)
SW 30Hz IC601-23
NO
YES
CYL FG.PG IC601-65
A

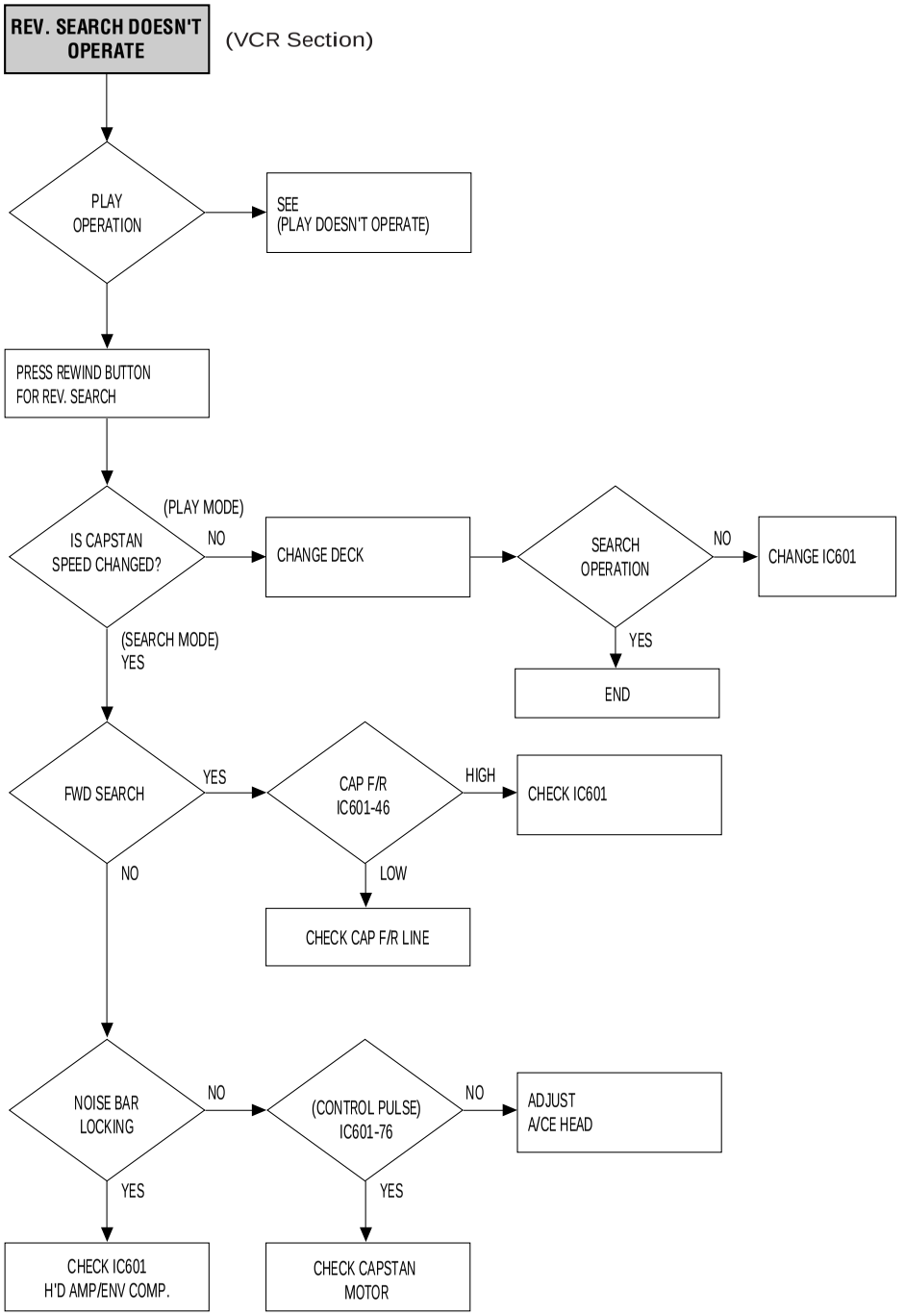

A
CAPSTAN ROTATION
NO
YES
SEE (CAPSTAN DOES NOT ROTATE)
(S.T REEL) IC601-1, 2
DC
PULSE
TAKE UP REEL SENSOR SUPPLY REEL SENSOR (PT601.PT602)
PROG.SW STATE IC601-62, 63, 64
STOP MODE
YES
CHECK LOADING MOTOR MECHANISM OR SW601
CHANGE IC601

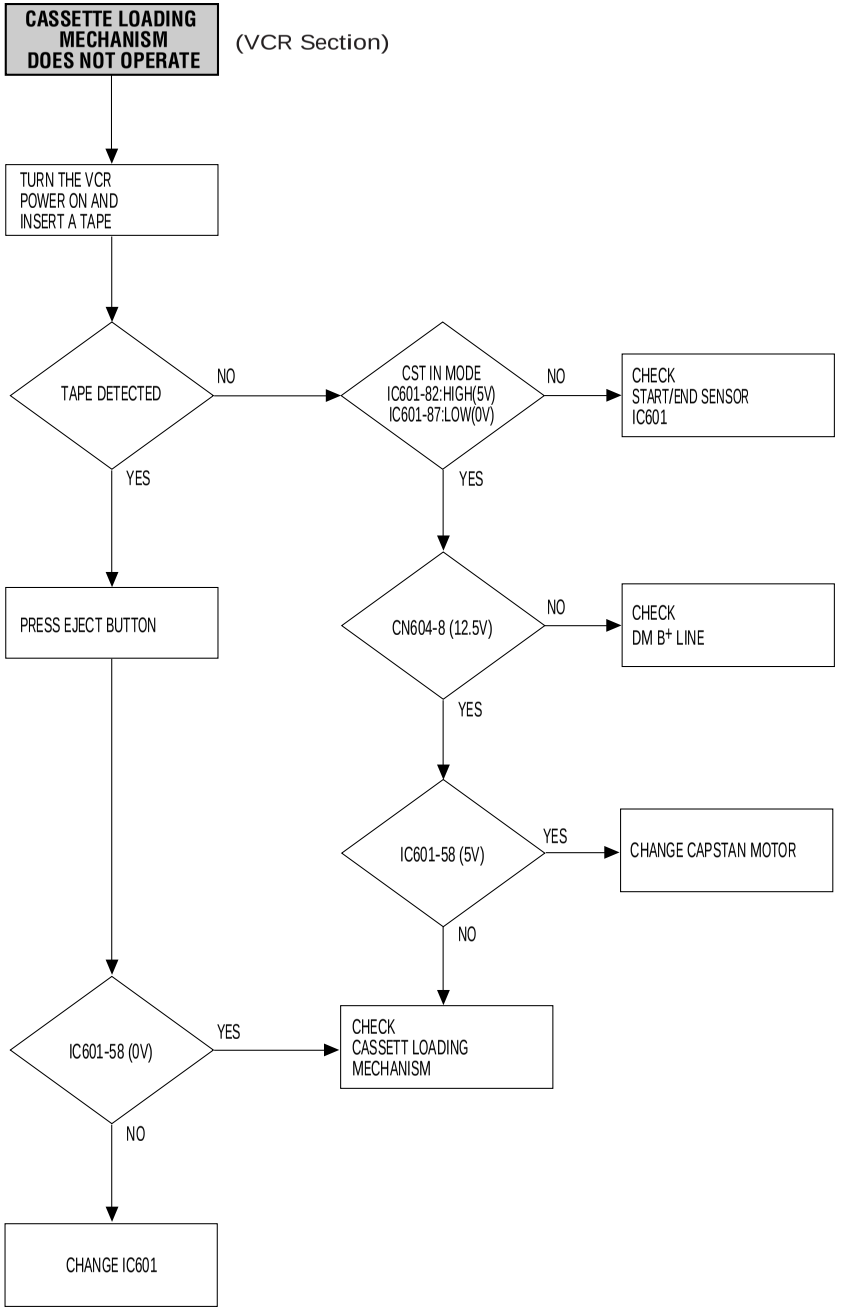

RECORD MODE DOESN'T OPERATE
(VCR Section)
PLAY OPERATION
NO
SEE (PLAY MODE DOESN'T OPERATE)
YES
LOAD VCR WITH A BLANK TAPE AND PRESS RECORD BUTTON
REC MODE
EJECT
SAFETY TAB
NO
CHANGE TAPE
YES
YES
CHANGE SW602 (REC SW)
D-REC A (H) IC601-29. 30
NO
CHECK IC601
YES
REC-VIDEO
NO
SEE (VIDEO MISSING IN RECORD MODE)
YES
SEE (AUDIO MISSING IN RECORD MODE)

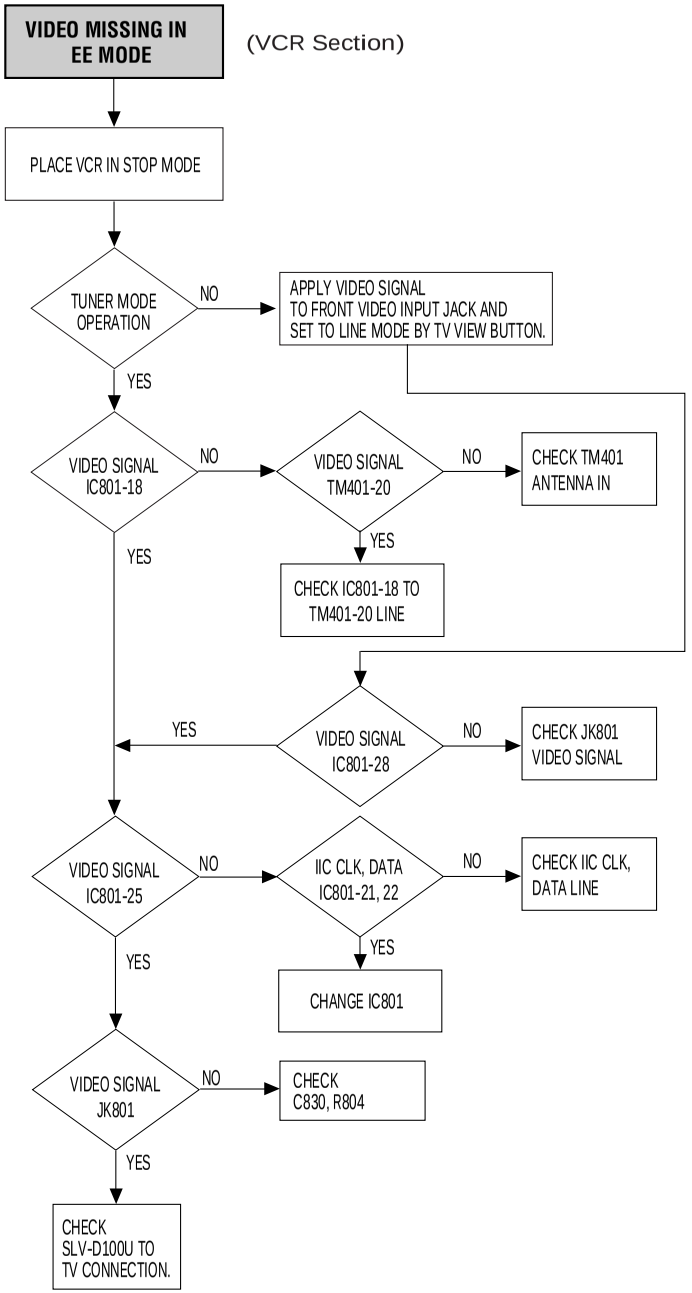

FAST FORWARD DOESN'T OPERATE
(VCR Section)
LOAD TAPE AND PRESS F.FWD BUTTON
F.FWD INDICATOR IN THE DISPLAY
NO
PRESS FF KEY IN REMOTE CONTROL
NO
CHANGE IC601-5
YES
YES
CHECK TIMER
MECHANISM STATE IC601-62, 63, 64
STOP
SEE (MECHANISM DOES NOT OPERATE IN PLAY MODE)
F.FWD
CAPSTAN MOTOR ROTATION
STOP
SEE (CAPSTAN DOES NOT ROTATE)
ROTATE
CHECK MECHANISM

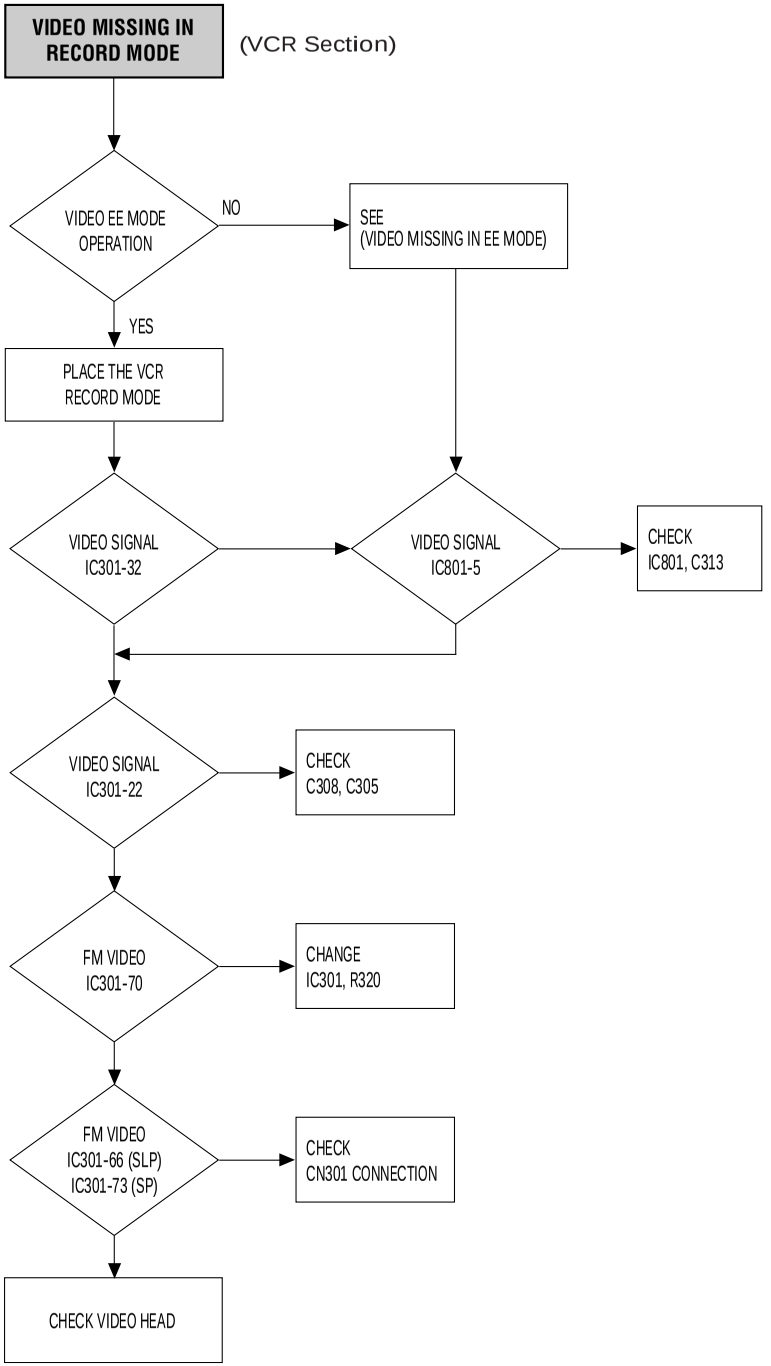

REWIND DOESN'T OPERATE
(VCR Section)
LOAD A TAPE
F.FWD OPERATION
NO
SEE (FAST FORWARD DOESN'T WORK)
YES
PRESS REWIND BUTTON
REW INDICATOR IN THE DISPLAY
NO
PRESS REW KEY IN REMOTE CONTROL
NO
CHECK IC601-5
YES
YES
CHECK TIMER
MECHANISM STATE IC601-62, 63, 64
STOP
SEE (MECHANISM DOES NOT OPERATE IN PLAY MODE)
REW
DOES CAPSTAN MOTOR ROTATE?
NO
CHECK IC601-46 (CM F/R)
YES
CHECK MECHANISM

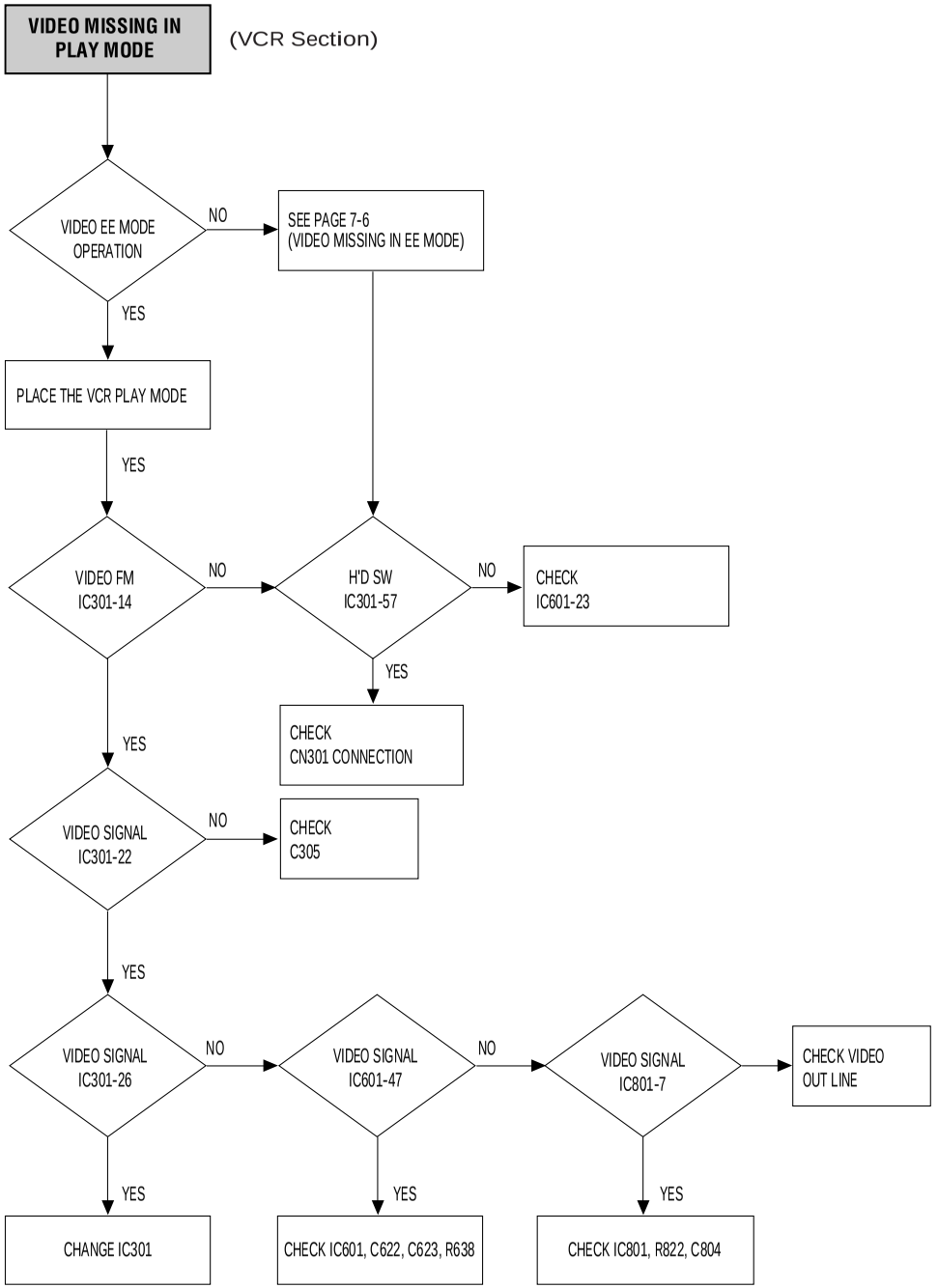

FWD SEARCH DOESN'T OPERATE
(VCR Section)
PLAY OPERATION
NO
SEE (PLAY DOESN'T OPERATE)
YES
PRESS F.FWD FOR FORWARD SEARCH
IS CAPSTAN SPEED CHANGED?
NO
CHANGE DECK
SEARCH OPERATION
NO
CHANGE IC601
YES
YES
END
NOISE BAR LOCKING
NO
(CONTROL PULSE) IC601-76
NO
ADJUST A/CE HEAD
YES
YES
CHECK IC601
CHECK CAPSTAN MOTOR

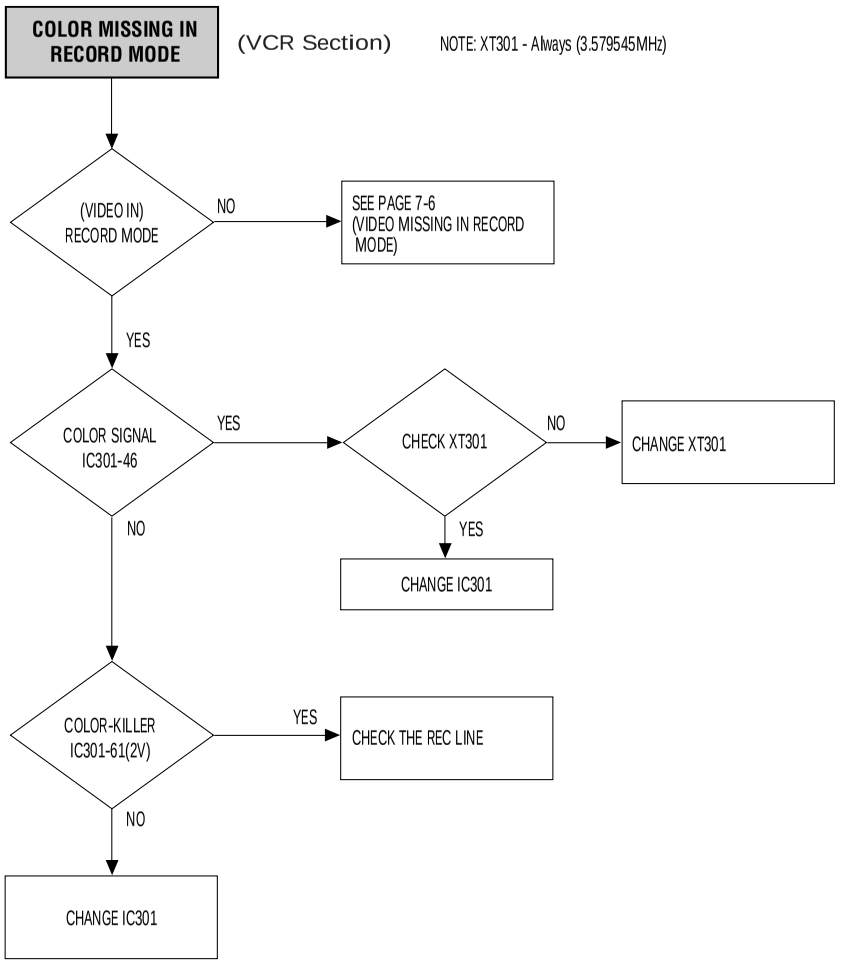

REV. SEARCH DOESN'T OPERATE
(VCR Section)
PLAY OPERATION
SEE (PLAY DOESN'T OPERATE)
PRESS REWIND BUTTON FOR REV. SEARCH
IS CAPSTAN SPEED CHANGED?
(PLAY MODE)
NO
CHANGE DECK
SEARCH OPERATION
NO
CHANGE IC601
YES
END
(SEARCH MODE)
YES
FWD SEARCH
YES
CAP F/R IC601-46
HIGH
CHECK IC601
LOW
CHECK CAP F/R LINE
NO
NOISE BAR LOCKING
NO
(CONTROL PULSE) IC601-76
NO
ADJUST A/CE HEAD
YES
YES
CHECK IC601 H'D AMP/ENV COMP.
CHECK CAPSTAN MOTOR

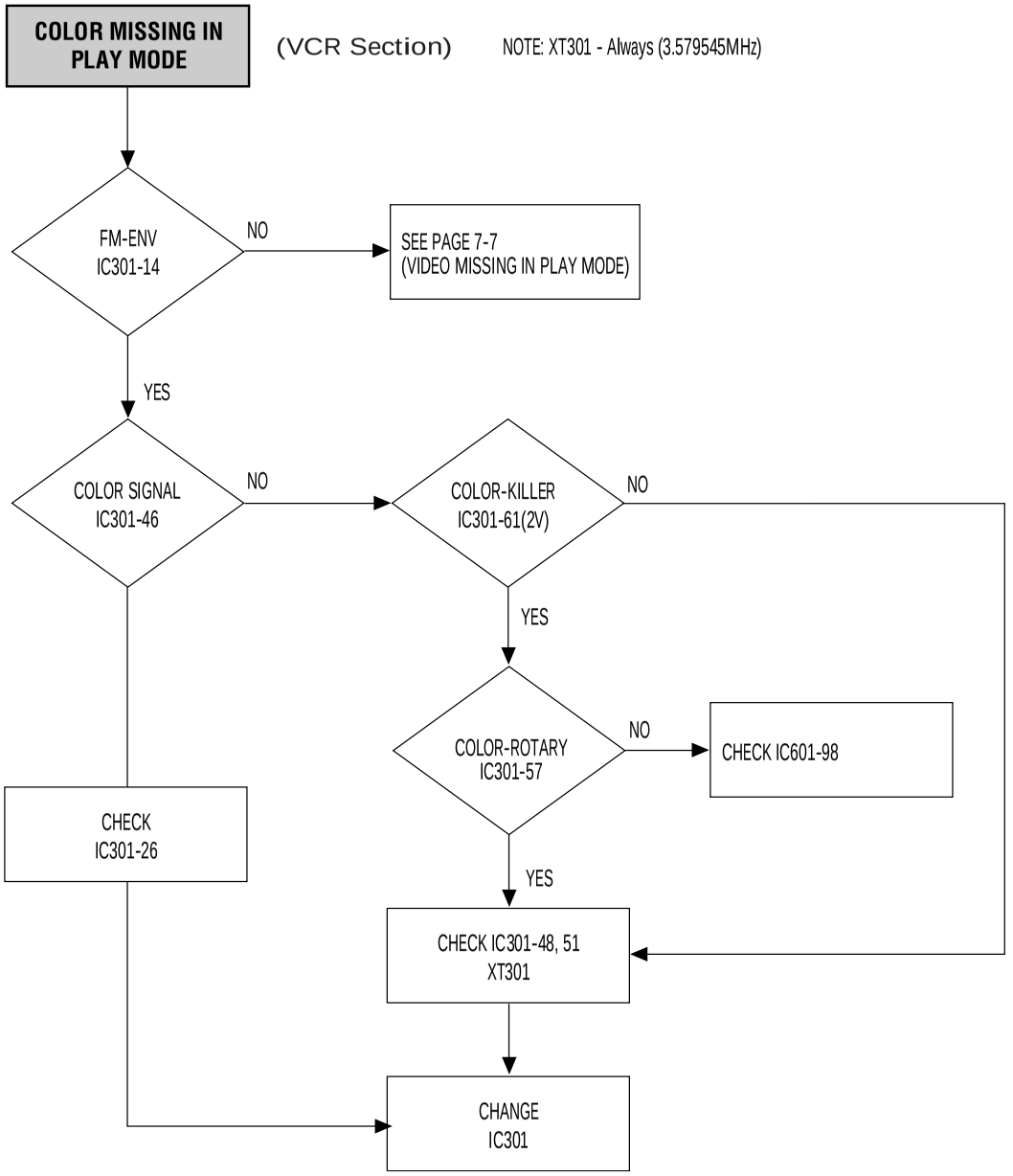

CASSETTE LOADING MECHANISM DOES NOT OPERATE
(VCR Section)
TURN THE VCR POWER ON AND INSERT A TAPE
TAPE DETECTED
NO
CST IN MODE IC601-82:HIGH(5V) IC601-87:LOW(0V)
NO
CHECK START/END SENSOR IC601
YES
YES
PRESS EJECT BUTTON
CN604-8 (12.5V)
NO
CHECK DM B+ LINE
YES
IC601-58 (5V)
YES
CHANGE CAPSTAN MOTOR
NO
IC601-58 (0V)
YES
CHECK CASSETT LOADING MECHANISM
NO
CHANGE IC601

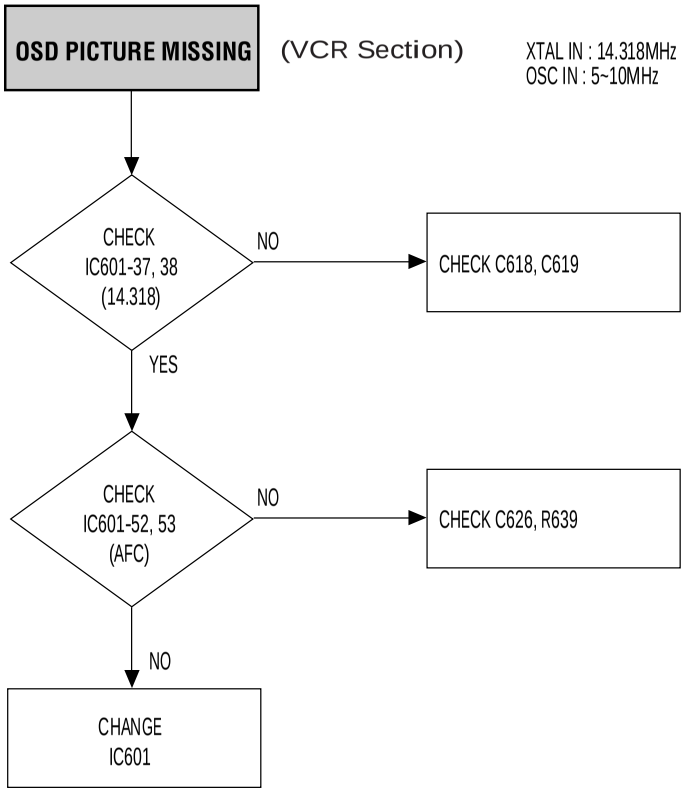

VIDEO MISSING IN EE MODE
(VCR Section)
PLACE VCR IN STOP MODE
TUNER MODE OPERATION
NO
APPLY VIDEO SIGNAL TO FRONT VIDEO INPUT JACK AND SET TO LINE MODE BY TV VIEW BUTTON.
YES
VIDEO SIGNAL IC801-18
NO
VIDEO SIGNAL TM401-20
NO
CHECK TM401 ANTENNA IN
YES
CHECK IC801-18 TO TM401-20 LINE
YES
VIDEO SIGNAL IC801-28
NO
CHECK JK801 VIDEO SIGNAL
VIDEO SIGNAL IC801-25
NO
IIC CLK, DATA IC801-21, 22
NO
CHECK IIC CLK, DATA LINE
YES
CHANGE IC801
YES
VIDEO SIGNAL JK801
NO
CHECK C830, R804
YES
CHECK SLV-D100U TO TV CONNECTION.

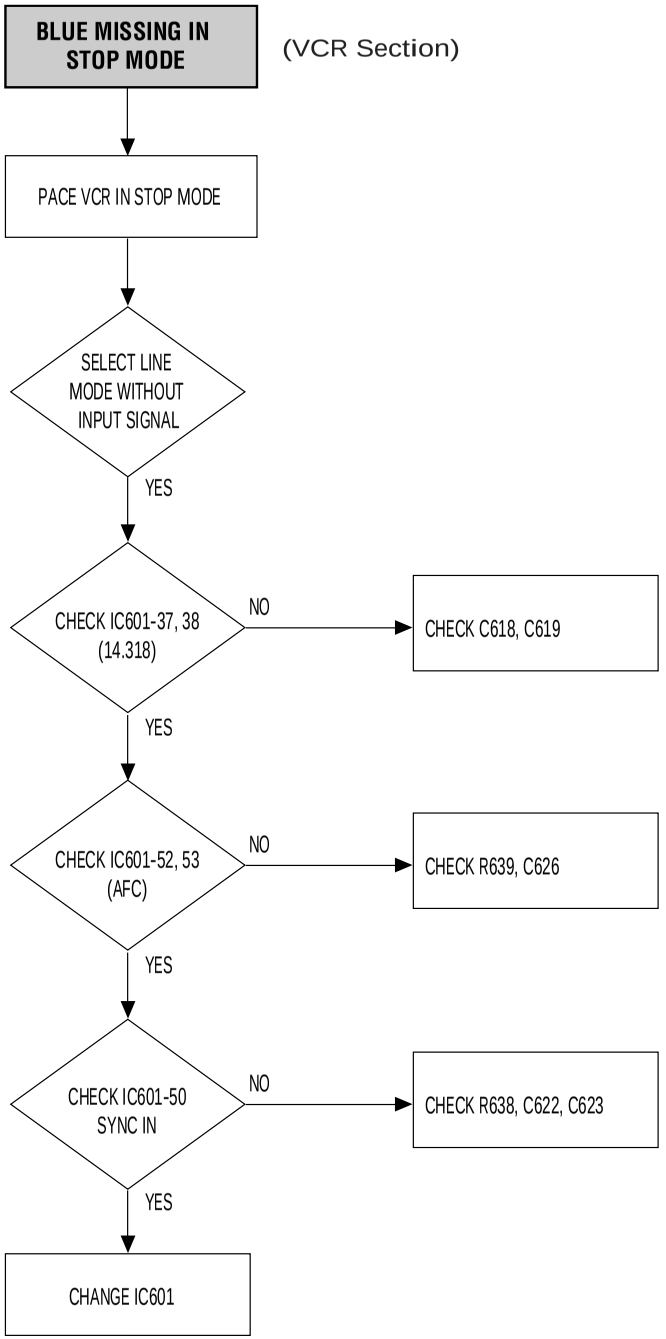

VIDEO MISSING IN RECORD MODE
(VCR Section)
VIDEO EE MODE OPERATION
NO
SEE (VIDEO MISSING IN EE MODE)
YES
PLACE THE VCR RECORD MODE
VIDEO SIGNAL IC301-32
VIDEO SIGNAL IC801-5
CHECK IC801, C313
VIDEO SIGNAL IC301-22
CHECK C308, C305
FM VIDEO IC301-70
CHANGE IC301, R320
FM VIDEO IC301-66 (SLP) IC301-73 (SP)
CHECK CN301 CONNECTION
CHECK VIDEO HEAD

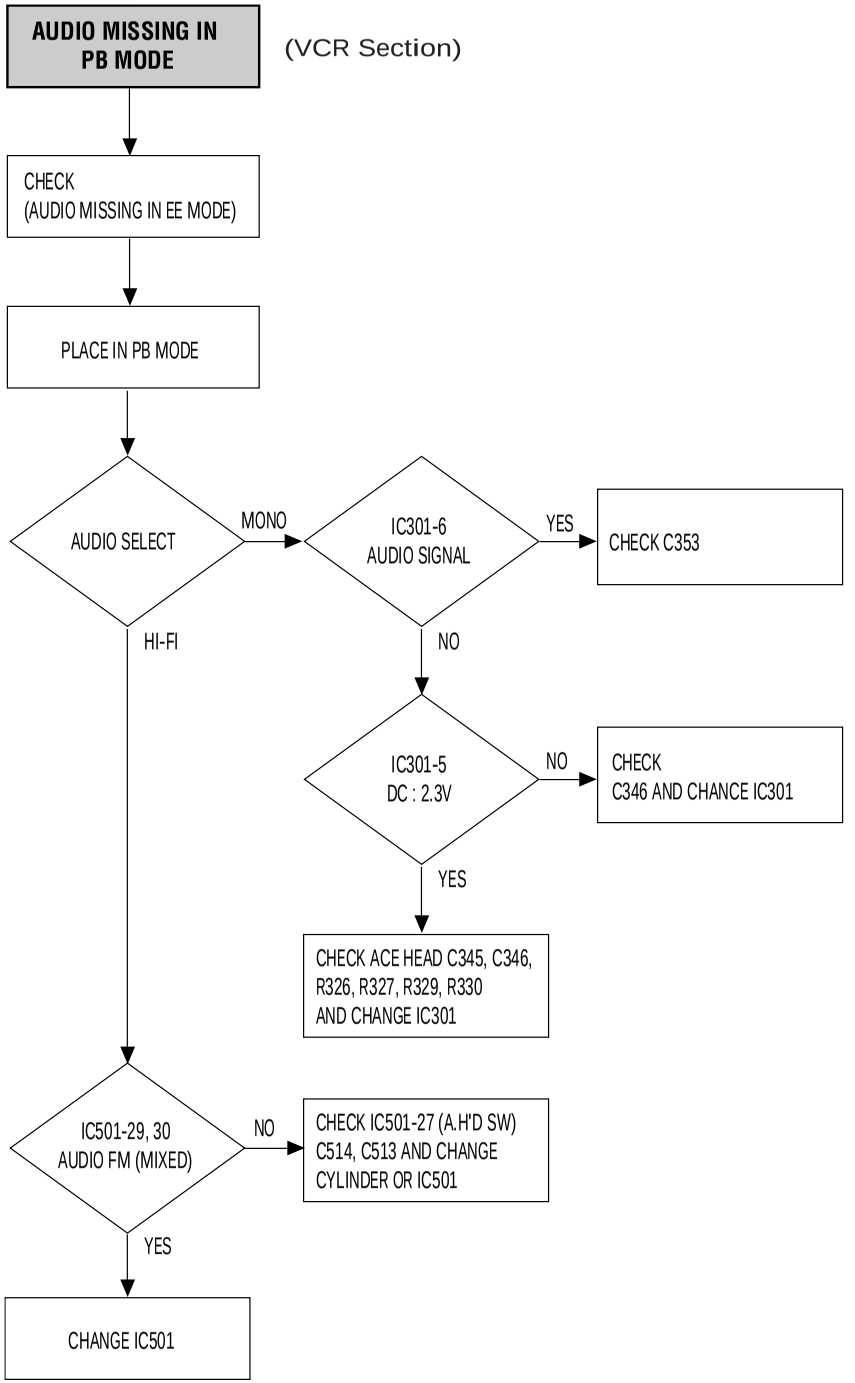

VIDEO MISSING IN PLAY MODE
(VCR Section)
VIDEO EE MODE OPERATION
NO
SEE PAGE 7-6 (VIDEO MISSING IN EE MODE)
YES
PLACE THE VCR PLAY MODE
YES
VIDEO FM IC301-14
NO
H'D SW IC301-57
NO
CHECK IC601-23
YES
CHECK CN301 CONNECTION
YES
VIDEO SIGNAL IC301-22
NO
CHECK C305
YES
VIDEO SIGNAL IC301-26
NO
VIDEO SIGNAL IC601-47
NO
VIDEO SIGNAL IC801-7
CHECK VIDEO OUT LINE
YES
CHANGE IC301
YES
CHECK IC601, C622, C623, R638
YES
CHECK IC801, R822, C804

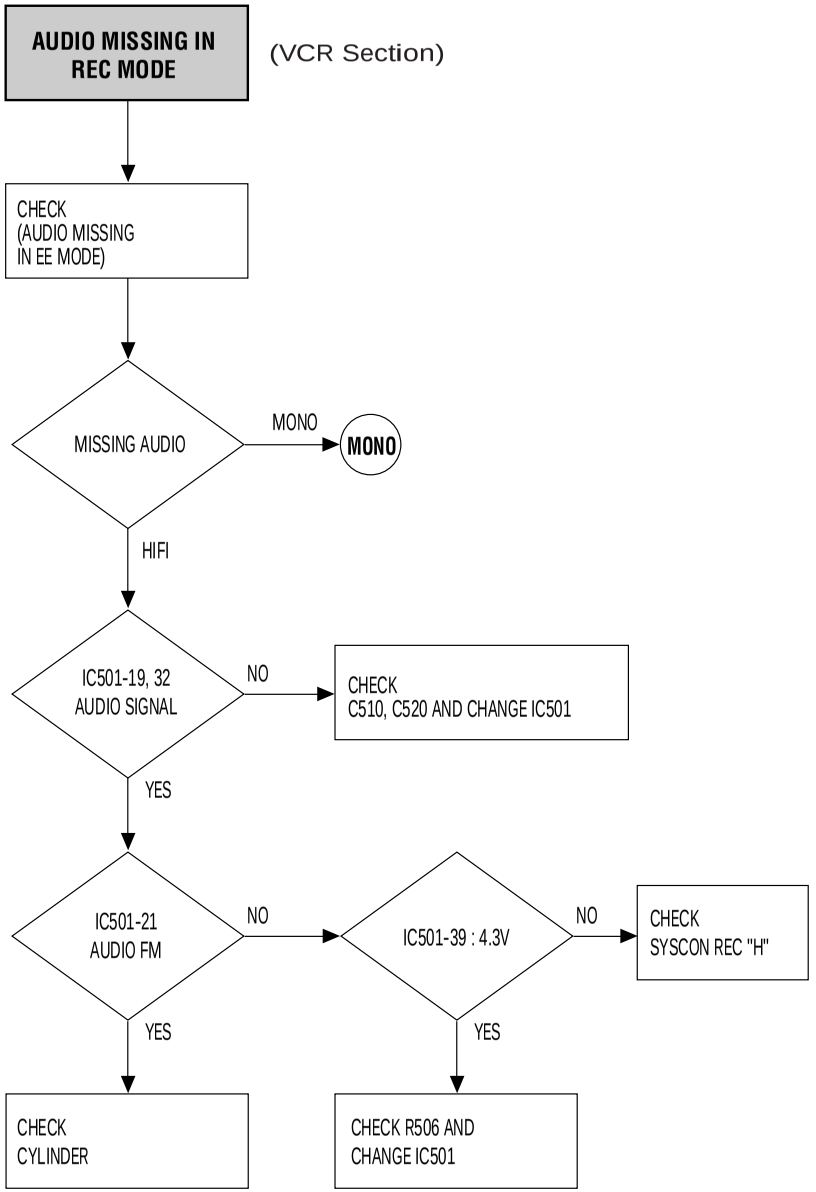

COLOR MISSING IN RECORD MODE
(VCR Section)
NOTE: XT301 - Always (3.579545MHz)
(VIDEO IN) RECORD MODE
NO
SEE PAGE 7-6 (VIDEO MISSING IN RECORD MODE)
YES
COLOR SIGNAL IC301-46
YES
CHECK XT301
NO
CHANGE XT301
YES
CHANGE IC301
NO
COLOR-KILLER IC301-61(2V)
YES
CHECK THE REC LINE
NO
CHANGE IC301

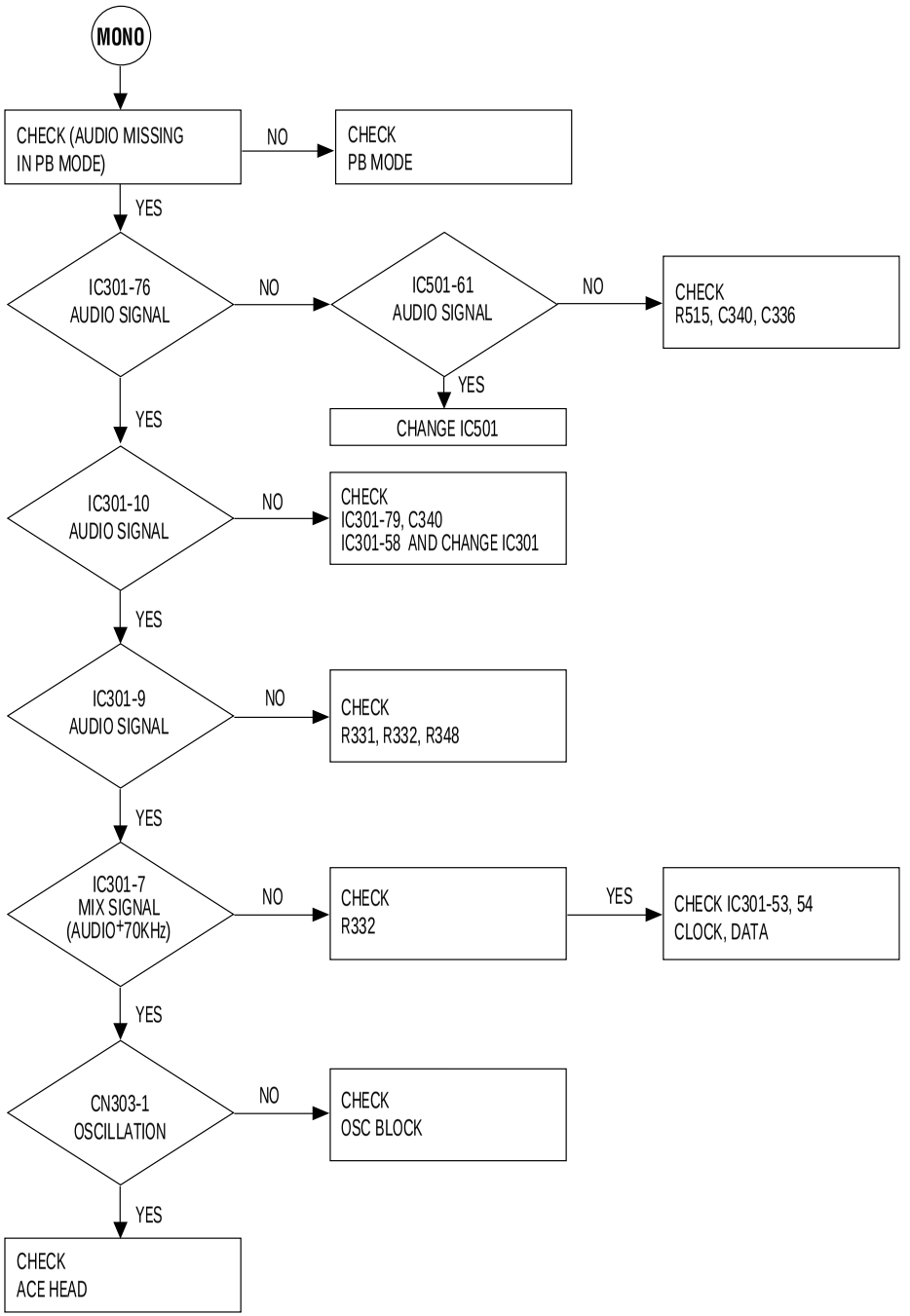

COLOR MISSING IN PLAY MODE
(VCR Section)
NOTE: XT301 - Always (3.579545MHz)
FM-ENV IC301-14
NO
SEE PAGE 7-7 (VIDEO MISSING IN PLAY MODE)
YES
COLOR SIGNAL IC301-46
NO
COLOR-KILLER IC301-61(2V)
NO
YES
COLOR-ROTARY IC301-57
NO
CHECK IC601-98
YES
CHECK IC301-26
CHECK IC301-48, 51 XT301
CHANGE IC301

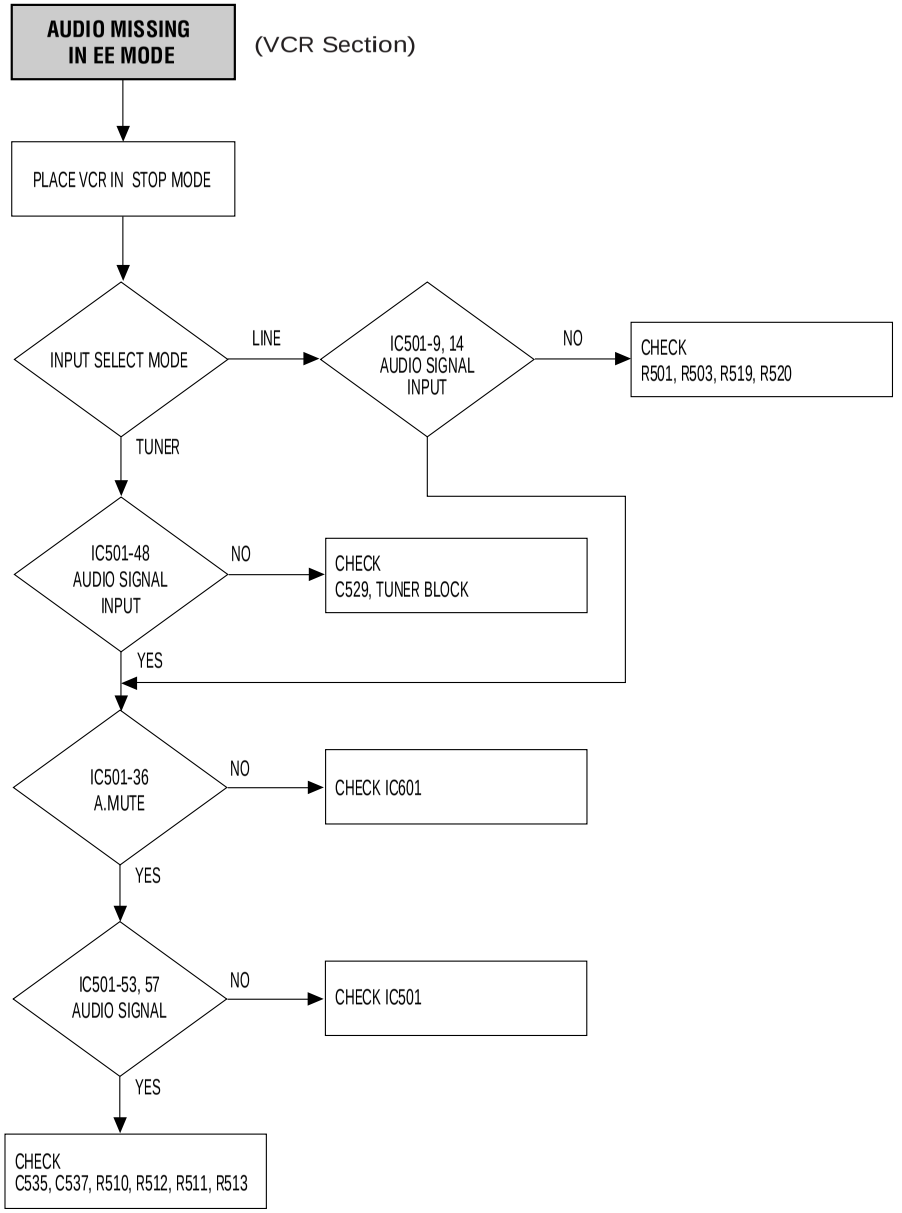

OSD PICTURE MISSING
(VCR Section)
XTAL IN : 14.318MHz
OSC IN : 5~10MHz
CHECK IC601-37, 38 (14.318)
NO
CHECK C618, C619
YES
CHECK IC601-52, 53 (AFC)
NO
CHECK C626, R639
NO
CHANGE IC601

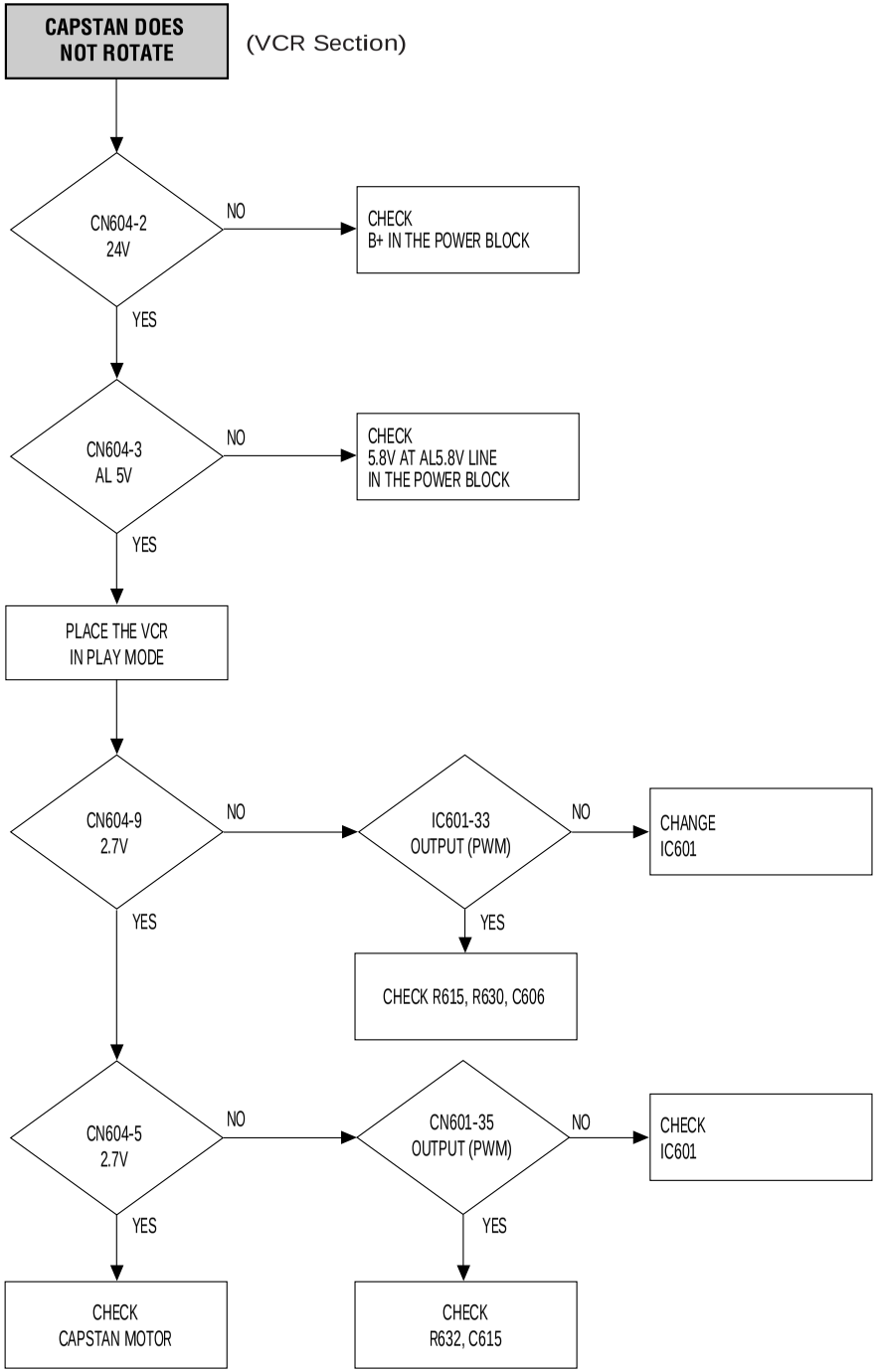

BLUE MISSING IN STOP MODE
(VCR Section)
PACE VCR IN STOP MODE
SELECT LINE MODE WITHOUT INPUT SIGNAL
YES
CHECK IC601-37, 38 (14.318)
NO
CHECK C618, C619
YES
CHECK IC601-52, 53 (AFC)
NO
CHECK R639, C626
YES
CHECK IC601-50 SYNC IN
NO
CHECK R638, C622, C623
YES
CHANGE IC601

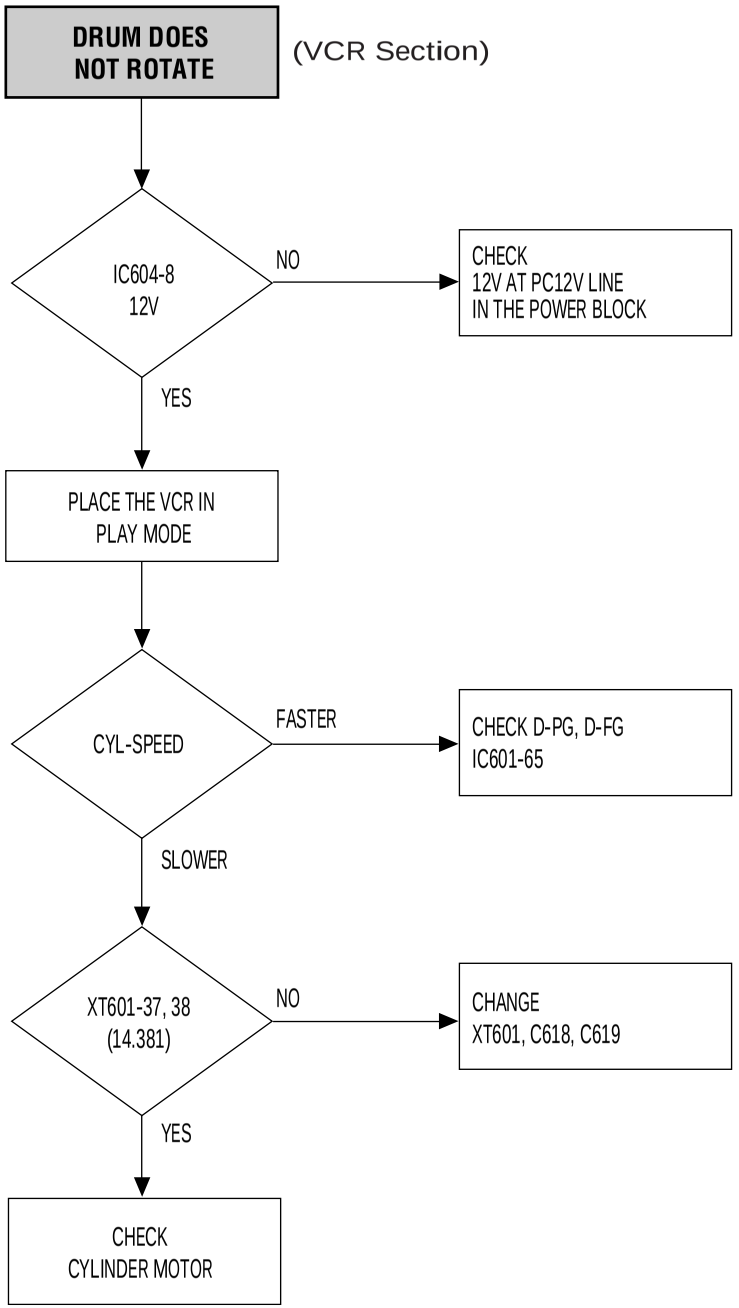

AUDIO MISSING IN PB MODE
(VCR Section)
CHECK (AUDIO MISSING IN EE MODE)
PLACE IN PB MODE
AUDIO SELECT
MONO
IC301-6 AUDIO SIGNAL
YES
CHECK C353
HI-FI
NO
IC301-5 DC : 2.3V
NO
CHECK C346 AND CHANCE IC301
YES
CHECK ACE HEAD C345, C346, R326, R327, R329, R330 AND CHANGE IC301
IC501-29, 30 AUDIO FM (MIXED)
NO
CHECK IC501-27 (A.H'D SW) C514, C513 AND CHANGE CYLINDER OR IC501
YES
CHANGE IC501

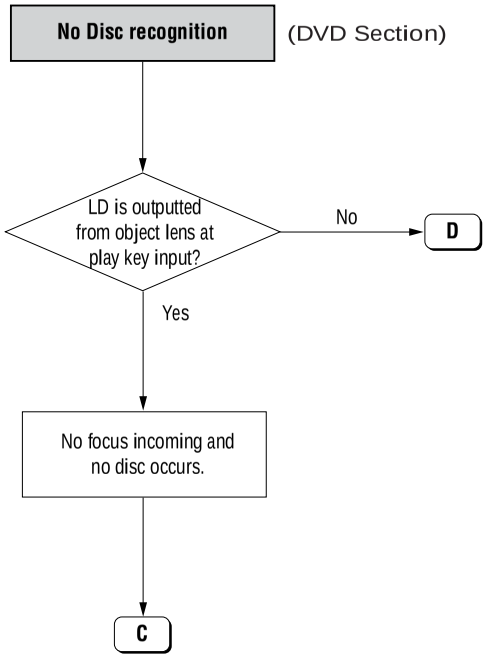

AUDIO MISSING IN REC MODE
(VCR Section)
CHECK (AUDIO MISSING IN EE MODE)
MISSING AUDIO
MONO
MONO
HIFI
IC501-19, 32 AUDIO SIGNAL
NO
CHECK C510, C520 AND CHANGE IC501
YES
IC501-21 AUDIO FM
NO
IC501-39 : 4.3V
NO
CHECK SYSCON REC "H"
YES
YES
CHECK CYLINDER
CHECK R506 AND CHANGE IC501

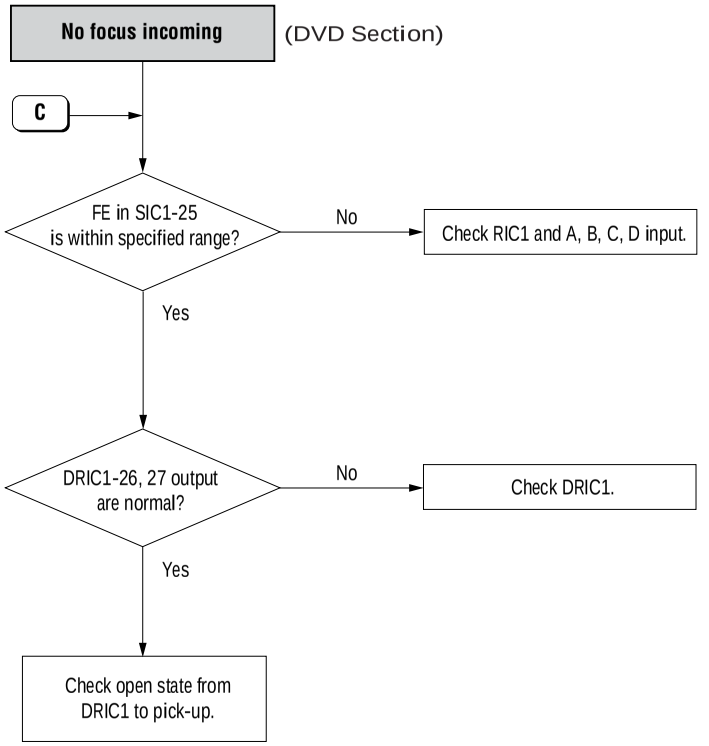

MONO
CHECK (AUDIO MISSING IN PB MODE)
NO
CHECK PB MODE
YES
IC301-76 AUDIO SIGNAL
NO
IC501-61 AUDIO SIGNAL
NO
CHECK R515, C340, C336
YES
CHANGE IC501
YES
IC301-10 AUDIO SIGNAL
NO
CHECK IC301-79, C340 IC301-58 AND CHANGE IC301
YES
IC301-9 AUDIO SIGNAL
NO
CHECK R331, R332, R348
YES
IC301-7 MIX SIGNAL (AUDIO+70KHz)
NO
CHECK R332
YES
CHECK IC301-53, 54 CLOCK, DATA
YES
CN303-1 OSCILLATION
NO
CHECK OSC BLOCK
YES
CHECK ACE HEAD

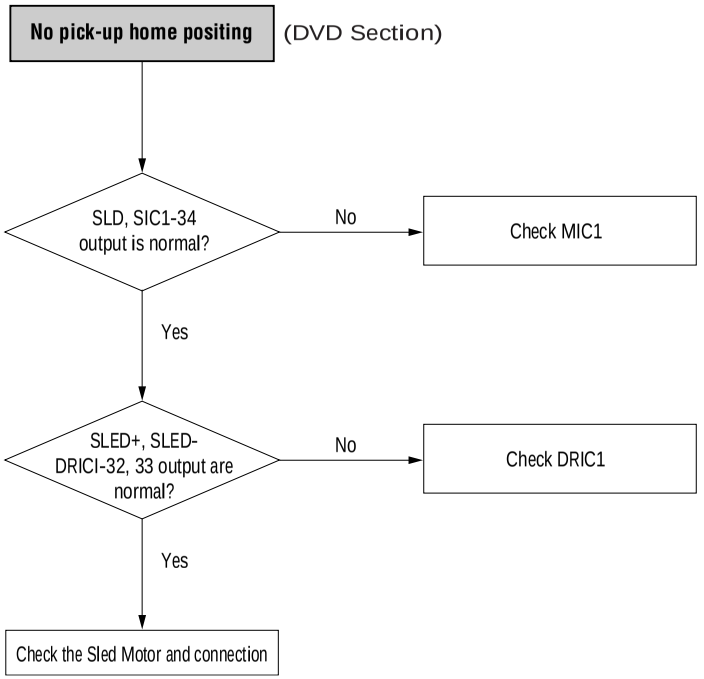

AUDIO MISSING IN EE MODE
(VCR Section)
PLACE VCR IN STOP MODE
INPUT SELECT MODE
LINE
IC501-9, 14 AUDIO SIGNAL INPUT
NO
CHECK R501, R503, R519, R520
TUNER
IC501-48 AUDIO SIGNAL INPUT
NO
CHECK C529, TUNER BLOCK
YES
IC501-36 A.MUTE
NO
CHECK IC601
YES
IC501-53, 57 AUDIO SIGNAL
NO
CHECK IC501
YES
CHECK C535, C537, R510, R512, R511, R513

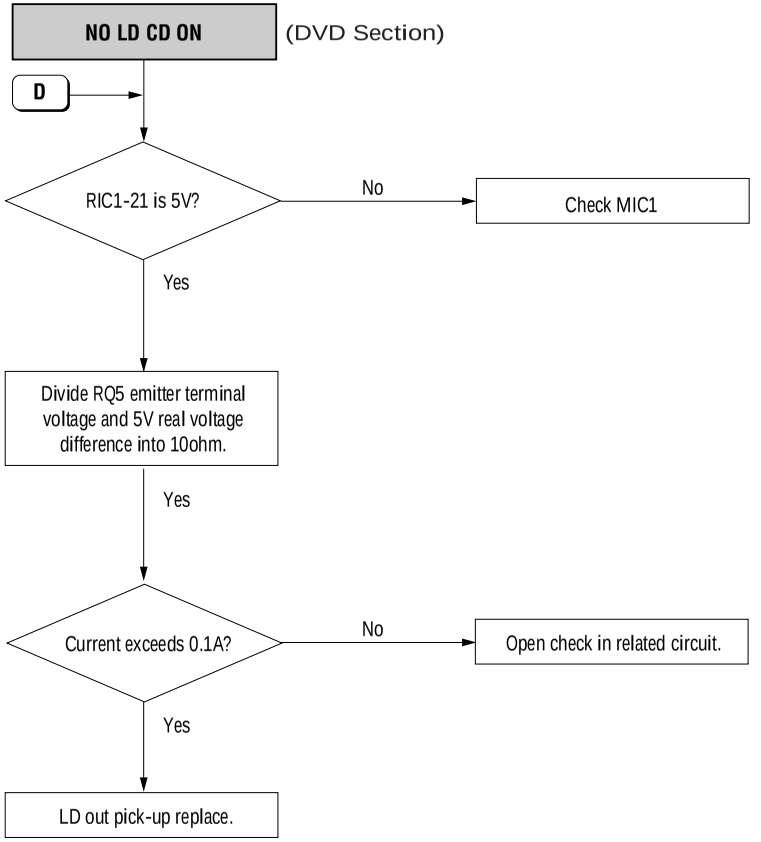

CAPSTAN DOES NOT ROTATE
(VCR Section)
CN604-2 24V
NO
CHECK B+ IN THE POWER BLOCK
YES
CN604-3 AL 5V
NO
CHECK 5.8V AT AL5.8V LINE IN THE POWER BLOCK
YES
PLACE THE VCR IN PLAY MODE
CN604-9 2.7V
NO
IC601-33 OUTPUT (PWM)
NO
CHANGE IC601
YES
YES
CHECK R615, R630, C606
CN604-5 2.7V
NO
CN601-35 OUTPUT (PWM)
NO
CHECK IC601
YES
YES
CHECK CAPSTAN MOTOR
CHECK R632, C615

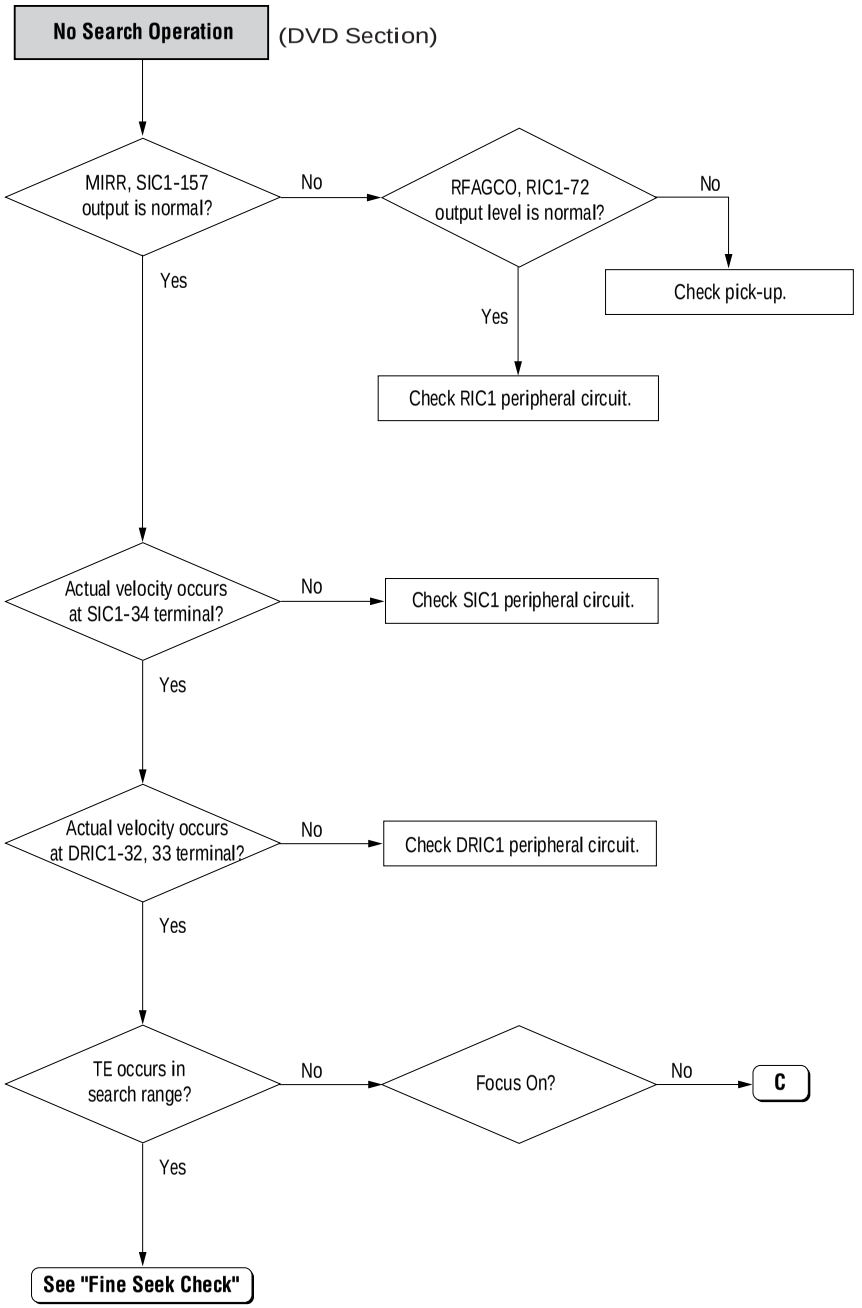

DRUM DOES NOT ROTATE
(VCR Section)
IC604-8 12V
NO
CHECK 12V AT PC12V LINE IN THE POWER BLOCK
YES
PLACE THE VCR IN PLAY MODE
CYL-SPEED
FASTER
CHECK D-PG, D-FG IC601-65
SLOWER
XT601-37, 38 (14.381)
NO
CHANGE XT601, C618, C619
YES
CHECK CYLINDER MOTOR

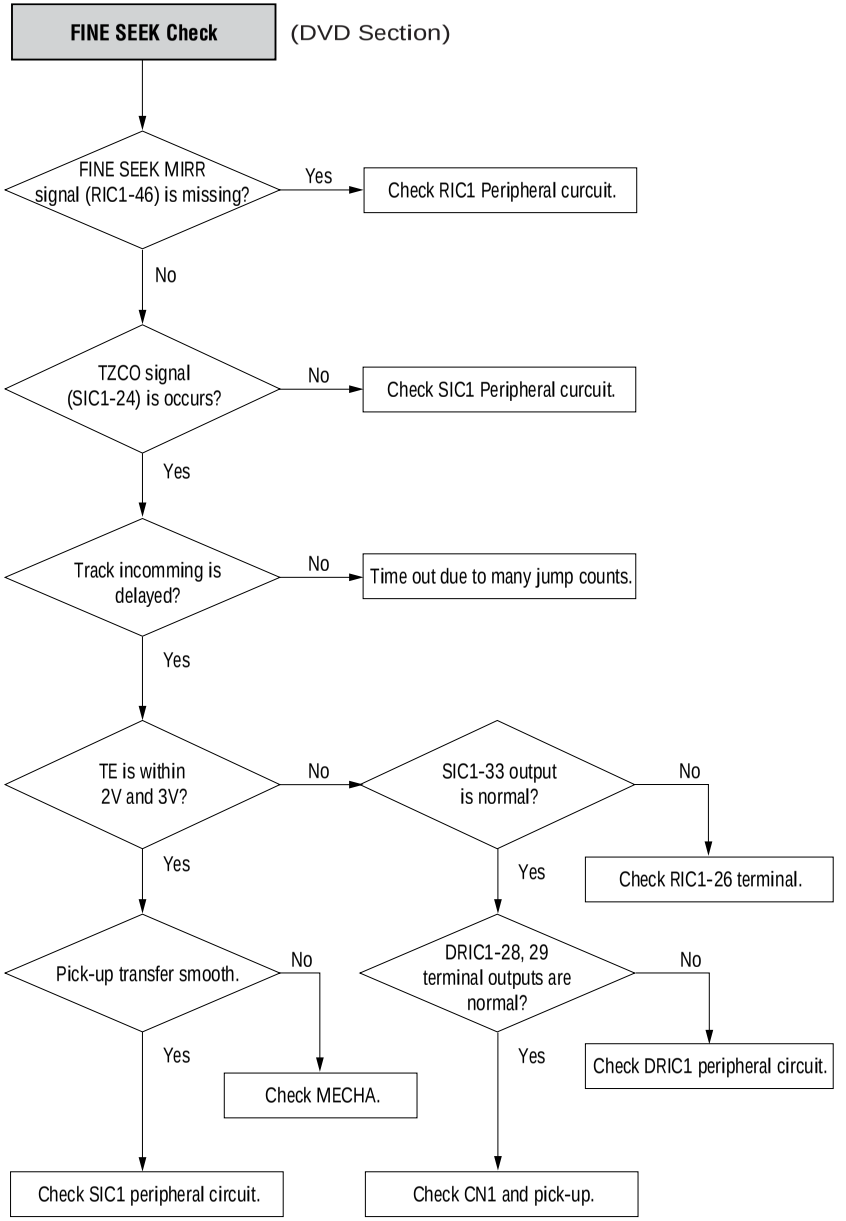

No Disc recognition
(DVD Section)
LD is outputted from object lens at play key input?
No
D
Yes
No focus incoming and no disc occurs.
C


No focus incoming
(DVD Section)
C
FE in SIC1-25 is within specified range?
No
Check RIC1 and A, B, C, D input.
Yes
DRIC1-26, 27 output are normal?
No
Check DRIC1.
Yes
Check open state from DRIC1 to pick-up.

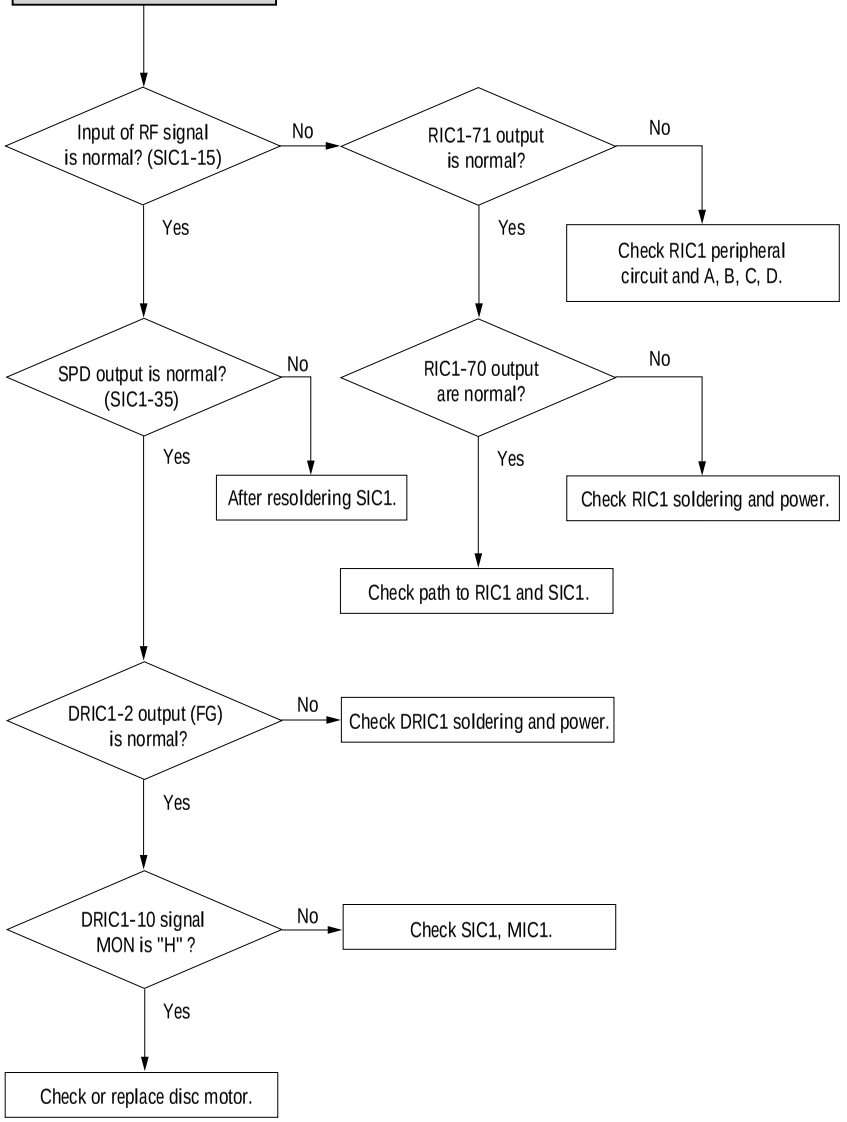

No pick-up home positing
(DVD Section)
SLD, SIC1-34 output is normal?
No
Check MIC1
Yes
SLED+, SLED- DRICI-32, 33 output are normal?
No
Check DRIC1
Yes
Check the Sled Motor and connection


NO LD CD ON
(DVD Section)
D
RIC1-21 is 5V?
No
Check MIC1
Yes
Divide RQ5 emitter terminal voltage and 5V real voltage difference into 10ohm.
Yes
Current exceeds 0.1A?
No
Open check in related circuit.
Yes
LD out pick-up replace.

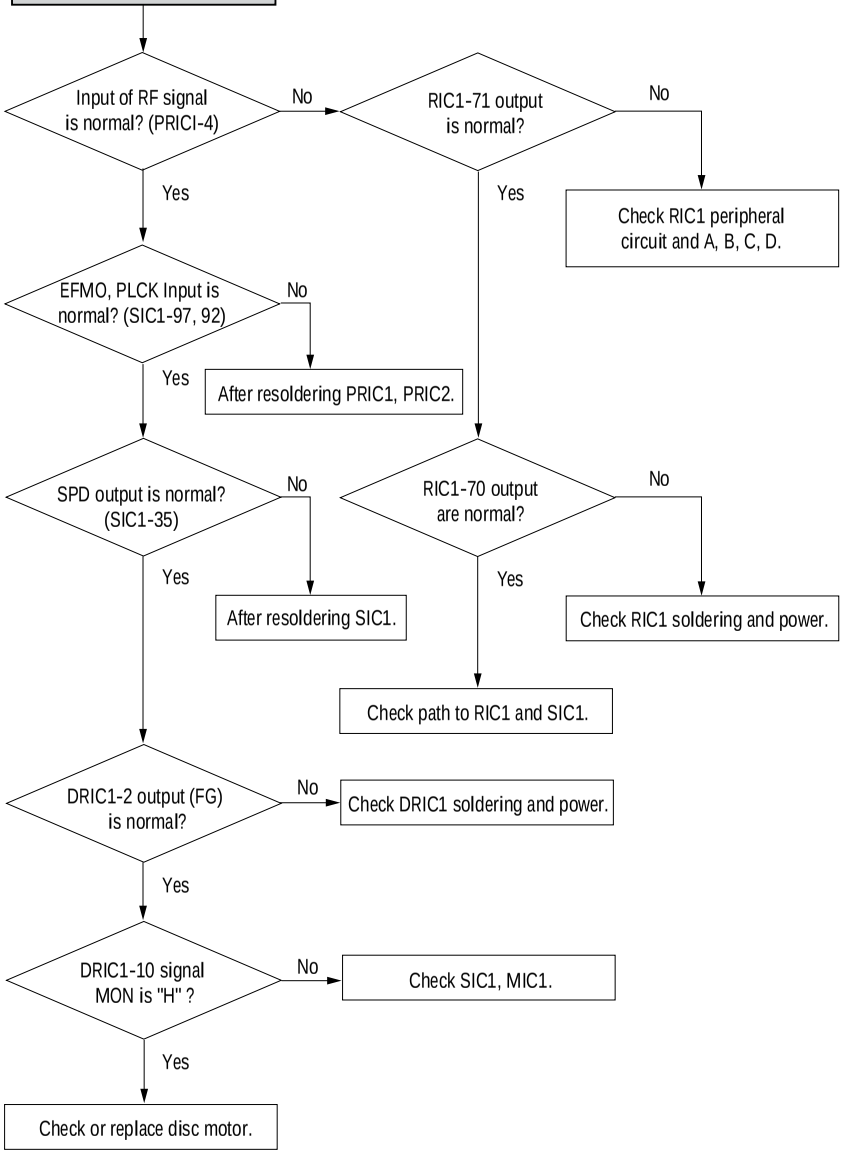

No Search Operation
(DVD Section)
MIRR, SIC1-157 output is normal?
No
RFAGCO, RIC1-72 output level is normal?
No
Check pick-up.
Yes
Yes
Check RIC1 peripheral circuit.
Actual velocity occurs at SIC1-34 terminal?
No
Check SIC1 peripheral circuit.
Yes
Actual velocity occurs at DRIC1-32, 33 terminal?
No
Check DRIC1 peripheral circuit.
Yes
TE occurs in search range?
No
Focus On?
No
C
Yes
See "Fine Seek Check"

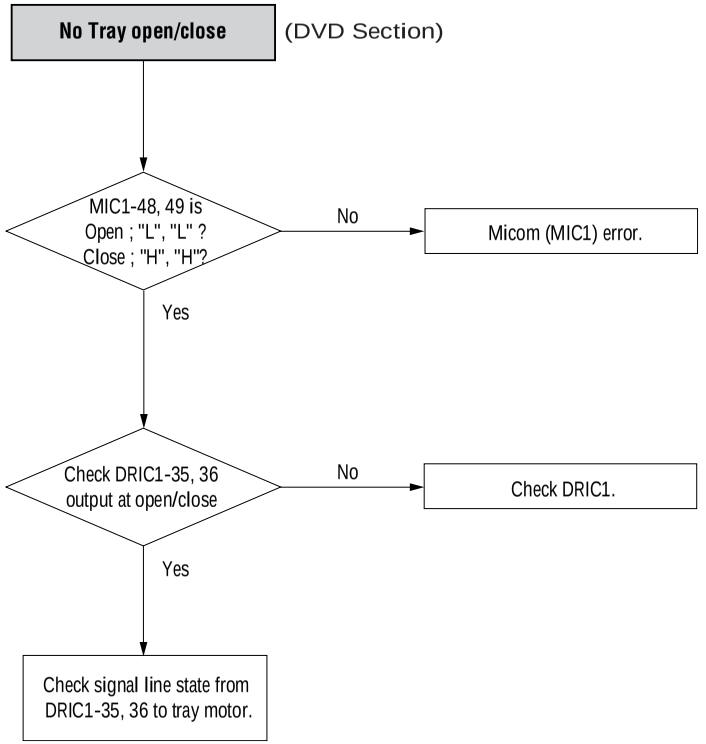

FINE SEEK Check
(DVD Section)
FINE SEEK MIRR signal (RIC1-46) is missing?
Yes
Check RIC1 Peripheral curcuit.
No
TZCO signal (SIC1-24) is occurs?
No
Check SIC1 Peripheral curcuit.
Yes
Track incomming is delayed?
No
Time out due to many jump counts.
Yes
TE is within 2V and 3V?
No
SIC1-33 output is normal?
No
Check RIC1-26 terminal.
Yes
Yes
Pick-up transfer smooth.
No
Check MECHA.
Yes
DRIC1-28, 29 terminal outputs are normal?
No
Check DRIC1 peripheral circuit.
Yes
Check SIC1 peripheral circuit.
Check CN1 and pick-up.

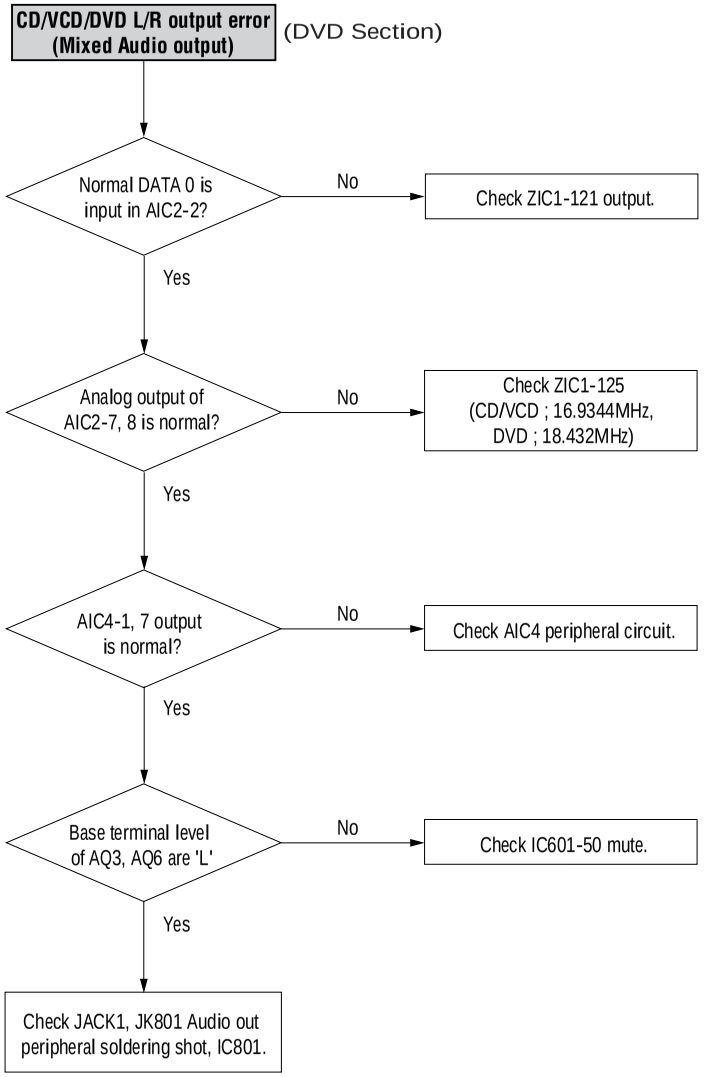
Abnormal rotation of disc motor (DVD Section), CD Play

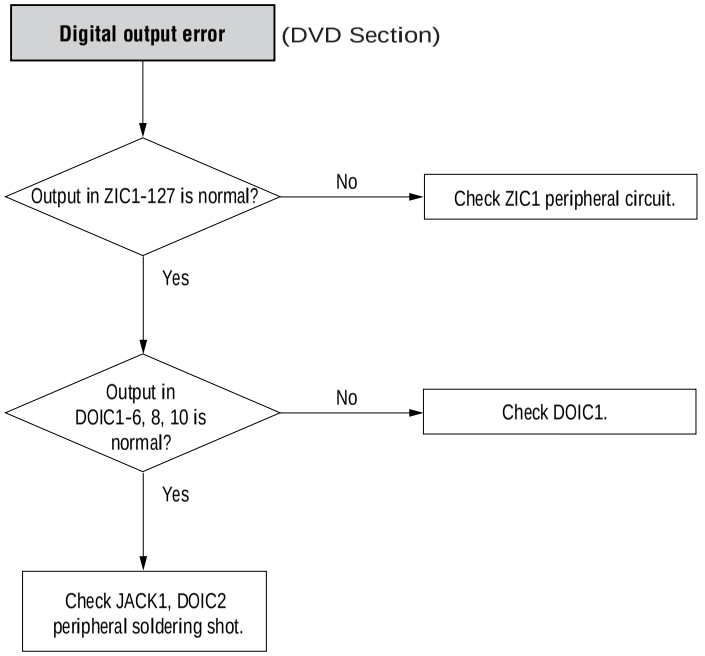


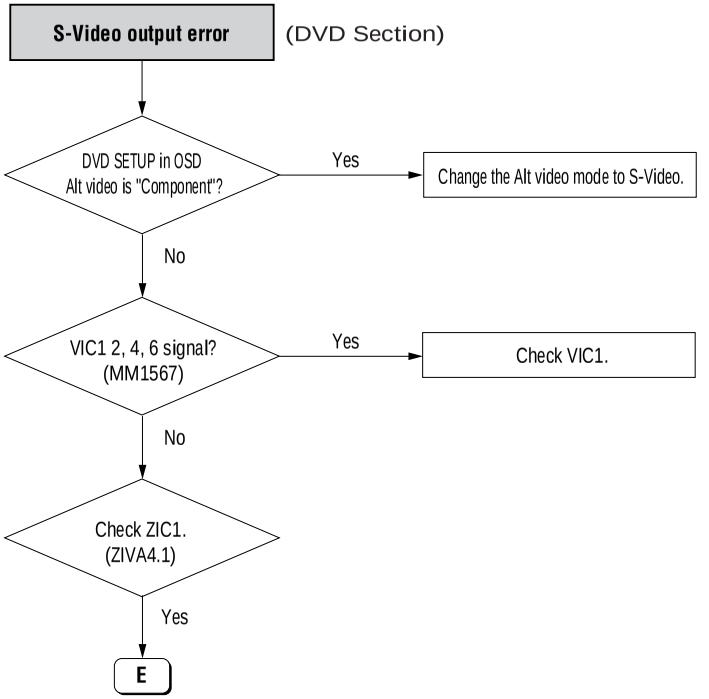
Abnormal rotation of disc motor (DVD Section), DVD Play

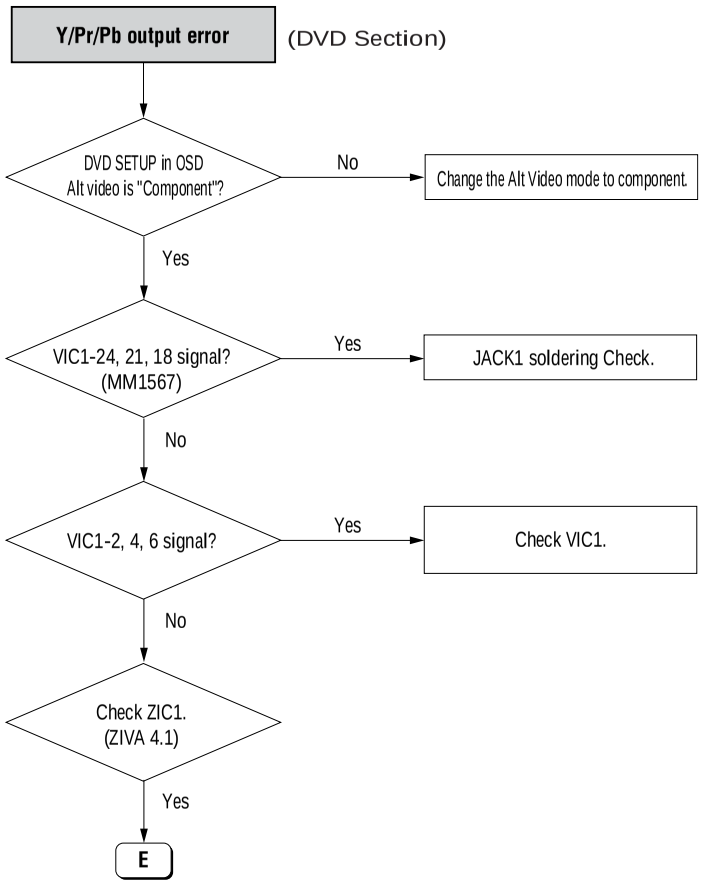


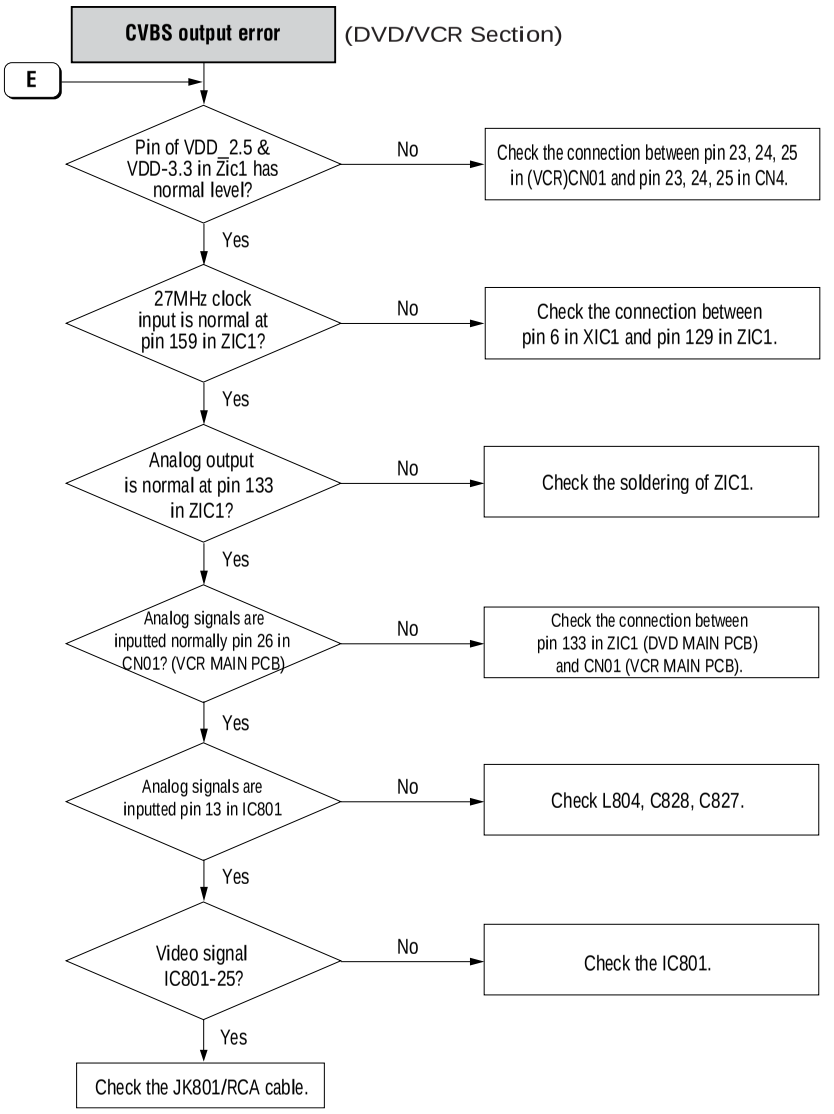

No Tray open/close
(DVD Section)
MIC1-48, 49 is
Open ; "L", "L" ?
Close ; "H", "H"?
No
Micom (MIC1) error.
Yes
Check DRIC1-35, 36
output at open/close
No
Check DRIC1.
Yes
Check signal line state from
DRIC1-35, 36 to tray motor.


CD/VCD/DVD L/R output error
(Mixed Audio output)
(DVD Section)
Normal DATA 0 is
input in AIC2-2?
No
Check ZIC1-121 output.
Yes
Analog output of
AIC2-7, 8 is normal?
No
Check ZIC1-125
(CD/VCD ; 16.9344MHz,
DVD ; 18.432MHz)
Yes
AIC4-1, 7 output
is normal?
No
Check AIC4 peripheral circuit.
Yes
Base terminal level
of AQ3, AQ6 are 'L'
No
Check IC601-50 mute.
Yes
Check JACK1, JK801 Audio out
peripheral soldering shot, IC801.


Digital output error
(DVD Section)
Output in ZIC1-127 is normal?
No
Check ZIC1 peripheral circuit.
Yes
Output in DOIC1-6, 8, 10 is normal?
No
Check DOIC1.
Yes
Check JACK1, DOIC2 peripheral soldering shot.


S-Video output error
(DVD Section)
DVD SETUP in OSD Alt video is "Component"?
Yes
Change the Alt video mode to S-Video.
No
VIC1 2, 4, 6 signal? (MM1567)
Yes
Check VIC1.
No
Check ZIC1. (ZIVA4.1)
Yes
E


Y/Pr/Pb output error
(DVD Section)
DVD SETUP in OSD
Alt video is "Component"?
No
Change the Alt Video mode to component.
Yes
VIC1-24, 21, 18 signal?
(MM1567)
Yes
JACK1 soldering Check.
No
VIC1-2, 4, 6 signal?
Yes
Check VIC1.
No
Check ZIC1.
(ZIVA 4.1)
Yes
E


CVBS output error
(DVD/VCR Section)
E
Pin of VDD_2.5 &
VDD-3.3 in Zic1 has
normal level?
No
Check the connection between pin 23, 24, 25
in (VCR)CN01 and pin 23, 24, 25 in CN4.
Yes
27MHz clock
input is normal at
pin 159 in ZIC1?
No
Check the connection between
pin 6 in XIC1 and pin 129 in ZIC1.
Yes
Analog output
is normal at pin 133
in ZIC1?
No
Check the soldering of ZIC1.
Yes
Analog signals are
inputted normally pin 26 in
CN01? (VCR MAIN PCB)
No
Check the connection between
pin 133 in ZIC1 (DVD MAIN PCB)
and CN01 (VCR MAIN PCB).
Yes
Analog signals are
inputted pin 13 in IC801
No
Check L804, C828, C827.
Yes
Video signal
IC801-25?
No
Check the IC801.
Yes
Check the JK801/RCA cable.

8. Repair Parts List

8-1 Exploded Views - - -

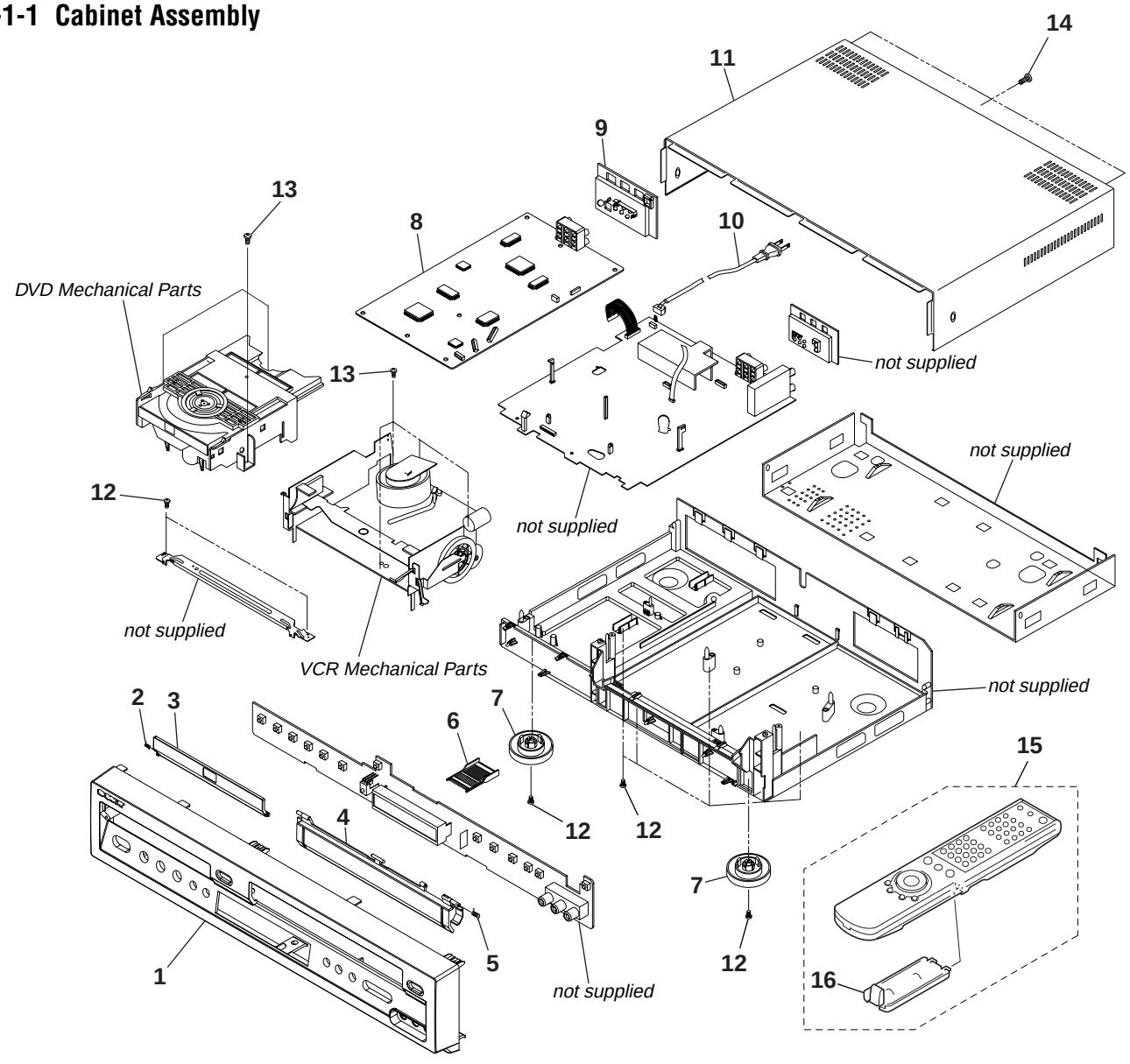
8-1 Exploded Views

NOTE:
- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

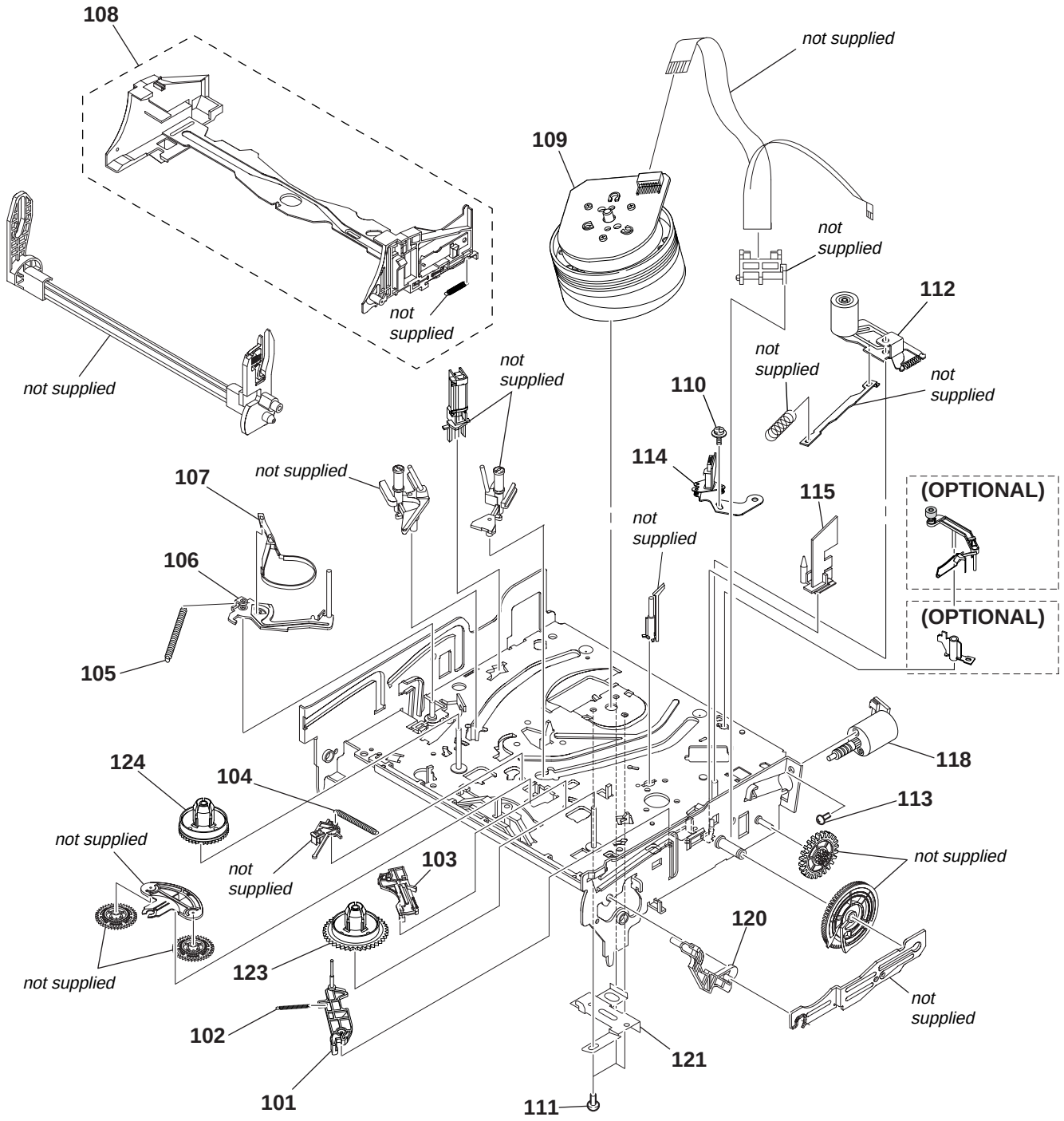
Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

8-1-1 Cabinet Assembly



Ref. No.	Part No.	Description	Remarks
1	3-078-577-01	ASSY PANEL FRONT (COMBO UC)	
2	3-078-578-01	SPRING ETC-DOOR TRAY	
3	3-078-630-01	DOOR TRAY	
4	3-078-629-01	DOOR CASSETTE	
5	3-078-579-01	SPRING ETC	
6	1-817-010-11	CONNECTOR-HEADER	
7	3-078-569-01	LEG (COMBO UC)	
8	A-6066-057-A	PWB DVD MOUNT	
9	3-078-599-01	ASSY CONNECTOR BOARD TM402B	
⚠10	1-824-674-11	POWER CORD EP2 SPT-2	
11	3-078-574-01	CABINET TOP (COMBO UC)	
12	3-075-256-01	SCREW TAP 3X12	
13	3-075-262-01	SCREW BH 4X12	
14	3-078-566-01	SCREW TAP M3 L10 BLK	
15	1-477-582-11	COMMANDER STANDARD (RMT-V501)	
16	3-078-598-01	BATTERY COVER (COMBO GRAY) (for RMT-V501)	

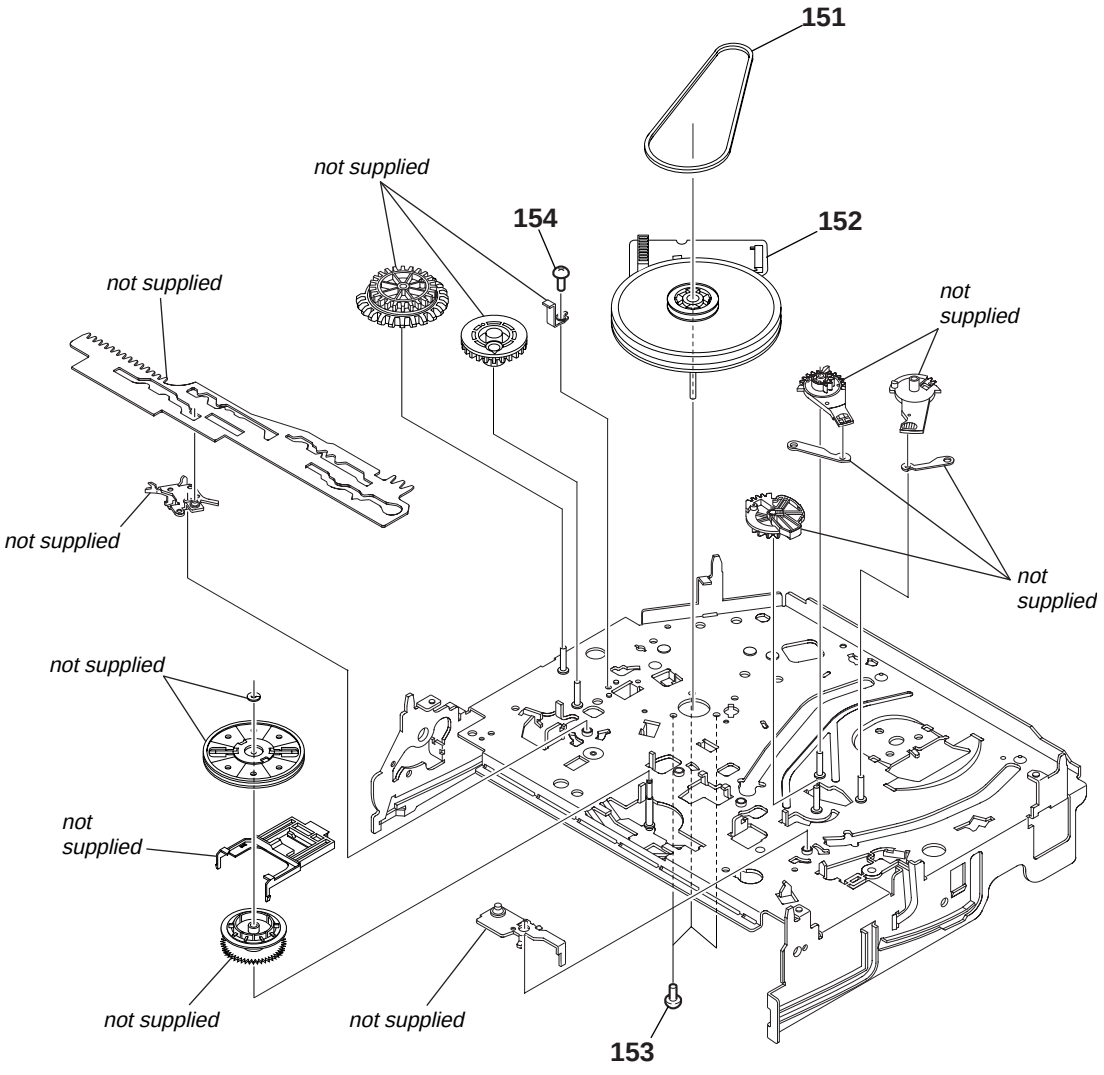
8-1-2 VCR Mechanical Parts (Top Side)



Ref. No.	Part No.	Description	Remarks
101	3-067-779-01	LEVER-#9 GUIDE	
102	3-067-780-01	SPRING-#9 GUIDE	
103	3-067-785-01	LEVER-T. BRAKE	
104	3-067-786-01	SPRING-BRAKE	
105	3-067-782-01	SPRING-TENSION LEVER	
106	3-067-781-01	LEVER-TENSION	
107	3-067-783-01	BAND-BREAK	
108	3-067-788-01	HOLDER-FL CASS.	
109	1-796-436-11	ASSY CLYNDER 6HD (J)	
110	3-075-253-01	SCREW ASSY MAC 2.6X5	

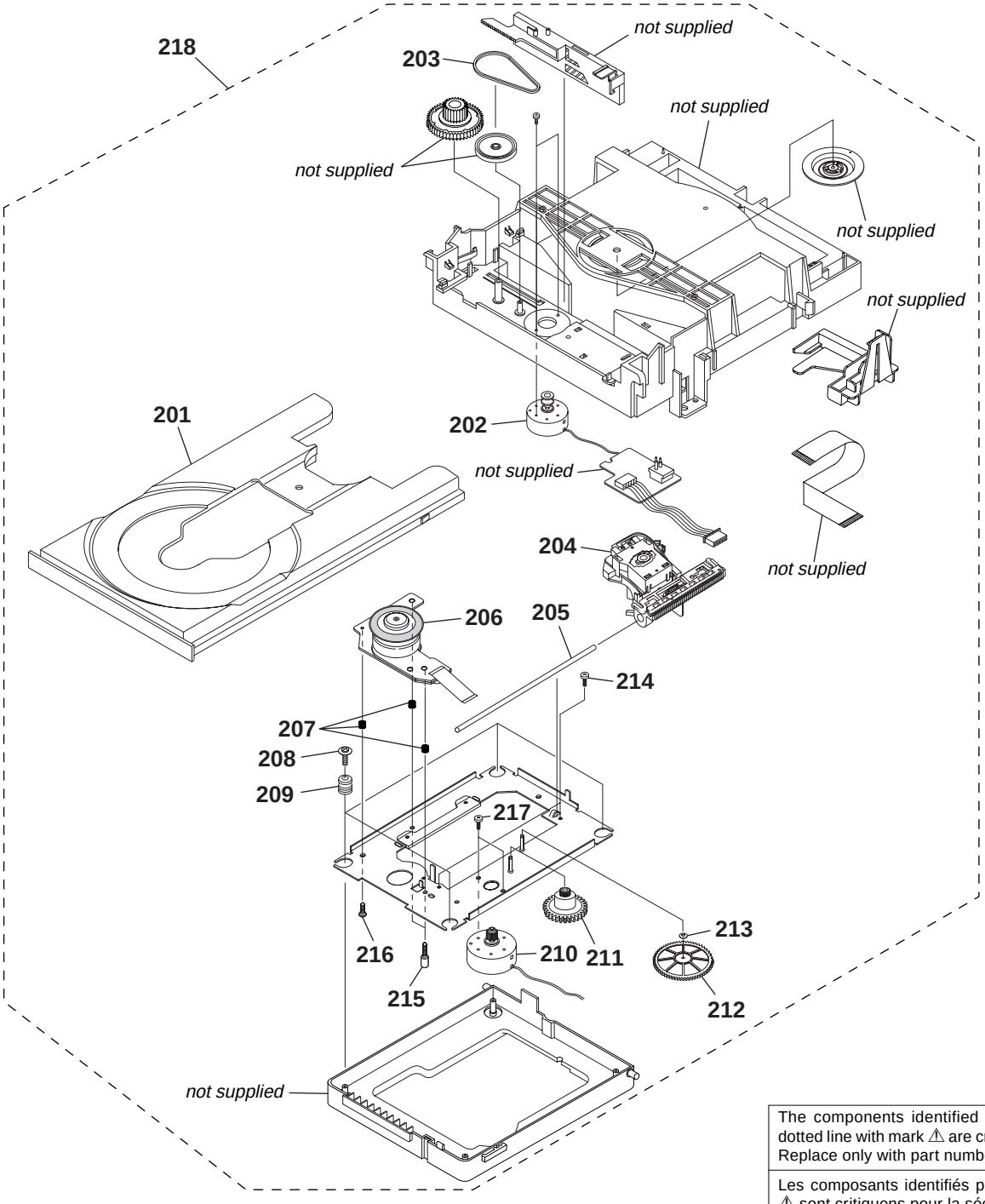
Ref. No.	Part No.	Description	Remarks
111	3-075-254-01	SCREW ASSY MAC 3X6	
112	3-067-784-01	LEVER-UNIT PINCH	
113	3-075-257-01	SCREW TAP 2.6X5	
114	3-075-241-01	ASSY ACE HEAD	
115	3-067-789-01	GUIDE-CASS. DOOR	
118	1-763-836-11	LOADING ASSY, MOTOR	
120	3-067-787-01	LEVER-FL DOOR	
121	3-067-796-01	PLATE-GROUND DECK	
123	3-075-046-01	DISK T REEL	
124	3-075-047-01	DISK S REEL	

8-1-3 VCR Mechanical Parts (Bottom Side)



Ref. No.	Part No.	Description	Remarks
151	3-067-790-01	BELT-PULLEY	
152	1-763-835-11	MOTOR CAPSTAN	
153	3-075-259-01	SCREW CAP 2.6X6	
154	3-075-260-01	SCREW MAC 3X3	

8-1-4 DVD Mechanical Parts



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remarks
201	3-078-586-01	TRAY DISC	
202	1-796-534-11	LOADING ASSY, MOTOR	
203	3-078-583-01	BELT RECTANGULAR	
⚠204	1-796-530-11	ASSY PICK UP	
205	3-078-588-01	SHAFT PU	
206	1-796-536-11	ASSY MOTOR-SPINDLE	
207	3-078-597-01	SPRING ETC SPINDOLE CHASSIS SUB	
208	3-078-592-01	SCREW TAP 2X6	
209	3-078-596-01	RUBBER INSULATOR	
210	1-796-537-11	FEED ASSY, MOTOR	
211	3-078-589-01	GEAR FEED A	
212	3-078-590-01	GEAR FEED B	
213	3-078-591-01	WASHER SLIT	
214	3-078-587-01	SCREW MAC 2.6X7	
215	3-078-593-01	SCREW SPE SWRCH18A	
216	3-078-594-01	SCREW MAC 2X6	
217	3-078-595-01	SCREW MAC MOTOR	
218	1-761-641-11	ASSY DVD DECK DP-7S COMBO	

DVD MAIN

8-2 Electrical Parts List

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- Not all of the parts are listed.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA... , uPA... , μPA... ,
  uPB... , μPB... , uPC... , μPC... ,
  uPD..., μPD...
- CAPACITORS:
  uF: μF
- COILS
  uH: μH

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remarks
	A-6066-057-A	DVD MAIN BOARD, COMPLETE	
		**********	
	3-075-255-01	SCREW TAP 3X8	
		< DIODE >	
AD1	1-805-012-11	DIODE DAN202K	
AD2	1-805-012-11	DIODE DAN202K	
AD3	1-805-012-11	DIODE DAN202K	
AD4	1-805-009-11	DIODE SWITCHING DAN217	
AD5	1-805-012-11	DIODE DAN202K	
AD6	1-805-013-11	DIODE DAP202K	
PD1	1-805-010-11	DIODE 1SR154-400	
RD1	1-805-013-11	DIODE DAP202K	
VZ1	1-805-011-11	DIODE UDZ9.1B	
VZ2	1-805-011-11	DIODE UDZ9.1B	
VZ3	1-805-011-11	DIODE UDZ9.1B	
VZ4	1-805-011-11	DIODE UDZ9.1B	
VZ5	1-805-011-11	DIODE UDZ9.1B	
VZ6	1-805-011-11	DIODE UDZ9.1B	
VZ7	1-805-011-11	DIODE UDZ9.1B	
VZ8	1-805-011-11	DIODE UDZ9.1B	
VZ9	1-805-011-11	DIODE UDZ9.1B	
VZ10	1-805-011-11	DIODE UDZ9.1B	
		< IC >	
AIC2	1-805-024-11	IC DA CONVERTER	
AIC4	1-805-028-11	IC OP AMP 4560	
AIC5	1-805-028-11	IC OP AMP 4560	
DOIC1	1-805-039-11	IC M74HCU04	
DRIC1	1-805-025-11	IC MOTOR DRIVER KA3017	
MIC1	1-805-023-11	IC MICOM 91C829	
MIC2	1-805-026-11	IC EPROM 27C081	
MIC3	1-805-027-11	IC EEPROM 24C021	
MIC5	1-805-020-11	IC CMOS LOGIC 7S32	
MIC6	1-805-021-11	IC CMOS LOGIC 7SET00	
MIC7	1-805-019-11	IC CMOS LOGIC 7ST08	
PIC1	1-805-030-11	IC V REGULATOR 1563	
PIC2	1-805-032-11	IC V REGULATOR MM1561	
PIC3	1-805-031-11	IC V REGULATOR 3RD13	
RIC1	1-805-038-11	IC ASIC KS1462B	
PRIC1	1-805-040-11	IC ASIC S5LR010X01	
PRIC2	1-805-022-11	IC CMOS LOGIC 74VHCT125A	
SIC1	1-805-037-11	IC ASIC KS1454	
SIC2	1-805-033-11	IC DRAM 416C256	
SIC4	1-805-019-11	IC CMOS LOGIC 7ST08	
VIC1	1-805-029-11	IC VIDEO AMP MM1567A	
XIC1	1-805-039-11	IC M74HCU04	
ZIC1	1-805-036-11	IC DECODER ZIVA4.1 B0	
ZIC2	1-805-034-11	IC DRAM 4S641632	
		< COIL >	
AL1	1-400-316-11	INDUCTOR 0uH	
AL2	1-400-316-11	INDUCTOR 0uH	
DOL1	1-400-315-11	INDUCTOR 0uH	
DOL2	1-400-316-11	INDUCTOR 0uH	
RL1	1-400-316-11	INDUCTOR 0uH	
VL1	1-400-316-11	INDUCTOR 0uH	
VL2	1-400-316-11	INDUCTOR 0uH	
VL3	1-400-316-11	INDUCTOR 0uH	
VL4	1-400-316-11	INDUCTOR 0uH	
VL7	1-400-316-11	INDUCTOR 0uH	
VL8	1-400-316-11	INDUCTOR 0uH	
VL9	1-400-316-11	INDUCTOR 0uH	
VL10	1-400-316-11	INDUCTOR 0uH	
VL11	1-400-316-11	INDUCTOR 0uH	
XL1	1-400-316-11	INDUCTOR 0uH	
XL2	1-400-316-11	INDUCTOR 0uH	
ZL1	1-400-316-11	INDUCTOR 0uH	
ZL4	1-400-316-11	INDUCTOR 0uH	
ZL5	1-400-316-11	INDUCTOR 0uH	
ZL7	1-400-316-11	INDUCTOR 0uH	
ZL8	1-400-316-11	INDUCTOR 0uH	
		< TRANSISTOR >	
AQ1	1-805-017-11	TRANSISTOR 200MW	
AQ2	1-805-018-11	TRANSISTOR KSR2103	
AQ3	1-805-016-11	TRANSISTOR KSC1623-L	
AQ4	1-805-017-11	TRANSISTOR 200MW	
AQ5	1-805-018-11	TRANSISTOR KSR2103	
AQ6	1-805-016-11	TRANSISTOR KSC1623-L	

Ref. No.	Part No.	Description		Remarks
AQ7	1-805-017-11	TRANSISTOR	200MW	
AQ8	1-805-018-11	TRANSISTOR	KSR2103	
AQ9	1-805-015-11	TRANSISTOR	KSA812	
AQ11	1-805-016-11	TRANSISTOR	KSC1623-L	
AQ12	1-805-016-11	TRANSISTOR	KSC1623-L	
PRQ1	1-805-016-11	TRANSISTOR	KSC1623-L	
RQ1	1-805-016-11	TRANSISTOR	KSC1623-L	
RQ2	1-805-016-11	TRANSISTOR	KSC1623-L	
RQ3	1-805-016-11	TRANSISTOR	KSC1623-L	
RQ4	1-805-014-11	TRANSISTOR	KSA1182-Y	
RQ5	1-805-014-11	TRANSISTOR	KSA1182-Y	
SQ1	1-805-018-11	TRANSISTOR	KSR2103	
		< VAIBRATOR >		
MY1	1-795-751-11	RESONATOR CERAMIC (20MHz)		
SY1	1-795-749-11	CRYSTAL UNIT (33.8688MHz)		
XY1	1-795-750-11	CRYSTAL UNIT (27MHz)		

		FUNCTION-TIMER BOARD, COMPLETE	
		**********	
		< DIODE >	
D701	1-804-407-11	DIODE IN4148	
D702	1-804-407-11	DIODE IN4148	
D703	1-804-407-11	DIODE IN4148	
D704	1-804-407-11	DIODE IN4148	
DT701	1-518-848-11	LED DISPLAY LTG-0208M (LITE-ON)	
		< IC >	
IC701	1-804-706-11	IC LED DRIVER	
RM701	1-805-007-11	IC MODULE, REMOCON	
		< COIL >	
L701	1-400-074-11	INDUCTOR 0uH	
		< SWITCH >	
SW701	1-786-354-11	TACT SW (BULK 5MM) (EJECT)	
SW702	1-786-354-11	TACT SW (BULK 5MM) (VCR)	
SW703	1-786-354-11	TACT SW (BULK 5MM) (DVD)	
SW704	1-786-354-11	TACT SW (BULK 5MM) (REC)	
SW705	1-786-354-11	TACT SW (BULK 5MM) (CH UP)	
SW706	1-786-354-11	TACT SW (BULK 5MM) (CH DOWN)	
SW707	1-786-354-11	TACT SW (BULK 5MM) (OPEN/CLOSE)	
SW708	1-786-354-11	TACT SW (BULK 5MM) (FF)	
SW709	1-786-354-11	TACT SW (BULK 5MM) (PLAY)	
SW710	1-786-354-11	TACT SW (BULK 5MM) (REW)	
SW711	1-786-354-11	TACT SW (BULK 5MM) (STOP)	
SW712	1-786-354-11	TACT SW (BULK 5MM) (POWER)	
SW713	1-786-354-11	TACT SW (BULK 5MM) (P/STILL)	

Ref. No.	Part No.	Description		Remarks
		VCR MAIN BOARD, COMPLETE		
		**********		
	3-075-066-01	HOLDER-SENSOR		
		< COIL >		
BD1SS1	1-400-085-11	INDUCTOR	0uH	
BD1SS2	1-400-085-11	INDUCTOR	0uH	
BD1SS3	1-400-085-11	INDUCTOR	0uH	
L302	1-400-085-11	INDUCTOR	0uH	
L303	1-400-085-11	INDUCTOR	0uH	
L1SS01	1-456-179-11	COIL-LINE FILTER	25mH	
L1SS02	1-424-828-11	COIL CHOKE	10uH	
L1SS03	1-424-828-11	COIL CHOKE	10uH	
L1SS04	1-424-828-11	COIL CHOKE	10uH	
L1SS05	1-424-828-11	COIL CHOKE	10uH	
		< CAPACITOR >		
⚠C1SD02	1-165-992-11	CAPACITOR	10000pF	
⚠C1SD03	1-165-557-11	CAPACITOR	2200pF	
⚠C1SS01	1-165-573-11	FILM	0.1uF	
⚠C1SS04	1-100-358-11	CERAMIC DISC	100pF	
		< DIODE >		
D1P101	1-804-409-11	DIODE IN4002		
D1P102	1-804-409-11	DIODE IN4002		
D1P103	1-804-407-11	DIODE IN4148		
D1P104	1-804-407-11	DIODE IN4148		
D1P105	1-804-407-11	DIODE IN4148		
D1P107	1-804-407-11	DIODE IN4148		
D1P108	1-804-407-11	DIODE IN4148		
D1SR10	1-804-407-11	DIODE IN4148		
D1SR11	1-804-407-11	DIODE IN4148		
D1SS01	1-804-413-11	DIODE IT5		
D1SS02	1-804-413-11	DIODE IT5		
D1SS03	1-804-413-11	DIODE IT5		
D1SS04	1-804-413-11	DIODE IT5		
D1SS05	1-805-041-11	DIODE SCHOTTKY SE55		
D1SS07	1-805-041-11	DIODE SCHOTTKY SE55		
D1SS08	1-805-041-11	DIODE SCHOTTKY SE55		
D1SS09	1-804-407-11	DIODE IN4148		
D1SS10	1-804-407-11	DIODE IN4148		
D1SS11	1-804-408-11	DIODE UF4007		
D1SS12	1-804-412-11	DIODE FIT4		
D1SS13	1-804-411-11	DIODE UG2D		
D1SS15	1-804-412-11	DIODE FIT4		
D503	1-804-407-11	DIODE IN4148		
D601	1-804-407-11	DIODE IN4148		
D603	1-804-409-11	DIODE IN4002		
D604	1-804-409-11	DIODE IN4002		
D605	1-804-407-11	DIODE IN4148		
D606	1-804-409-11	DIODE IN4002		
D801	1-804-407-11	DIODE IN4148		
D803	1-804-407-11	DIODE IN4148		

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VCR MAIN

Ref. No.	Part No.	Description	Remarks
D804	1-804-407-11	DIODE IN4148	
D813	1-804-407-11	DIODE IN4148	
D814	1-804-407-11	DIODE IN4148	
LD601	1-804-438-11	LED-IR	
ZD1P01	1-804-414-11	DIODE ZENER UZP33B	
ZD1P02	1-804-418-11	DIODE ZENER MTZJ12B	
ZD1P03	1-804-417-11	DIODE ZENER MTZJ9.1B	
ZD1P04	1-804-416-11	DIODE ZENER MTZJ5.1B	
ZD1P05	1-804-418-11	DIODE ZENER MTZJ12B	
ZD1P06	1-804-416-11	DIODE ZENER MTZJ5.1B	
ZD1SS1	1-804-415-11	DIODE ZENER UZP43B	
		< FUSE >	
⚠F1SD01	1-576-525-11	FUSE (1.6A/250V)	
		< IC >	
IC1SS1	1-804-784-11	IC PHOTO COUPLER	
IC1SS2	1-804-445-11	IC KA4318	
IC301	1-804-772-11	IC VIDEO LA71201	
IC501	1-804-434-11	IC AN3663FBP	
IC601	1-805-006-11	IC MICON MN101D06F	
IC603	1-805-042-11	IC EEPROM 524C80D41	
IC6B1	1-804-444-11	IC KA7533	
IC801	1-805-035-11	IC AUDIO LA73024V	
		< PHOTO INTERRUPTER >	
PT601	1-804-770-11	TRANSISTOR PHOTO INTERRUPTER	
PT602	1-804-770-11	TRANSISTOR PHOTO INTERRUPTER	
		< TRANSFORMER >	
⚠PT1SD1	1-437-943-11	TRANS SWITCHING EER3530	
		< TRANSISTOR >	
Q1P101	1-804-424-11	TRANSISTOR KSC2328AY	
Q1P102	1-804-429-11	TRANSISTOR KSR2001	
Q1P103	1-804-421-11	TRANSISTOR KSC945	
Q1P104	1-804-421-11	TRANSISTOR KSC945	
Q1P105	1-804-424-11	TRANSISTOR KSC2328AY	
Q1P106	1-804-424-11	TRANSISTOR KSC2328AY	
Q1P107	1-804-424-11	TRANSISTOR KSC2328AY	
Q1P108	1-804-429-11	TRANSISTOR KSR2001	
Q1P109	1-804-421-11	TRANSISTOR KSC945	
Q1P110	1-804-424-11	TRANSISTOR KSC2328AY	
Q1P111	1-804-424-11	TRANSISTOR KSC2328AY	
Q1SD11	1-804-767-11	TRANSISTOR POWER	
Q1SR12	1-804-422-11	TRANSISTOR KTC3023	
Q302	1-804-420-11	TRANSISTOR KSA733	
Q303	1-804-421-11	TRANSISTOR KSC945	
Q304	1-804-420-11	TRANSISTOR KSA733	
Q305	1-804-422-11	TRANSISTOR KTC3023	
Q306	1-804-420-11	TRANSISTOR KSA733	
Q307	1-804-422-11	TRANSISTOR KTC3023	
Q308	1-804-422-11	TRANSISTOR KTC3023	

Ref. No.	Part No.	Description	Remarks
Q601	1-804-428-11	TRANSISTOR KSR1004	
		< PHOTO TRANSISTOR >	
S601	1-804-439-11	PHOTO TRANSISTOR	
S602	1-804-439-11	PHOTO TRANSISTOR	
		< SWITCH >	
SW602	1-786-199-11	SWITCH REC	
SW603	1-786-198-11	SWITCH MODE	
		< TUNER >	
TM401	1-693-551-11	TUNER NTSC	
		< VARISTOR >	
⚠VA1SS1	1-804-437-11	VARISTOR	
		MISCELLANEOUS	
		**********	
6	1-817-010-11	CONNECTOR-HEADER	
⚠10	1-824-674-11	POWER CORD EP2 SPT-2	
109	1-796-436-11	ASSY CLYNDER 6HD (J)	
118	1-763-836-11	LOADING ASSY, MOTOR	
152	1-763-835-11	MOTOR CAPSTAN	
202	1-796-534-11	LOADING ASSY, MOTOR	
⚠204	1-796-530-11	ASSY PICK UP	
206	1-796-536-11	ASSY MOTOR-SPINDLE	
210	1-796-537-11	FEED ASSY, MOTOR	
218	1-761-641-11	ASSY DVD DECK DP-7S COMBO	

ACCESSORIES & PACKING MATERIALS
****

	1-477-582-11	COMMANDER STANDARD (RMT-V501)
	3-077-210-12	MANUAL, INSTRUCTION (ENGLISH)
	3-077-210-22	MANUAL, INSTRUCTION (FRENCH)
	3-078-598-01	BATTERY COVER (COMBO GRAY) (for RMT-V501)

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Home Video Company

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